Data Report, Third Round of Stage 1 Groundwater Quality Monitoring Sitcum Waterway Remediation Project Port of Tacoma, Washington

Prepared for
Port of Tacoma
Port Project E1509

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HARTCROWSER

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SITCUM – MILWAUKEE NCDF GW MONITORING

DATA REPORT
THIRD ROUND OF STAGE 1 GROUNDWATER QUALITY MONITORING
SITCUM WATERWAY REMEDIATION PROJECT
PORT OF TACOMA, WASHINGTON

1.0 INTRODUCTION

This report summarizes the Third Round of Stage 1 groundwater quality monitoring data collected during March 2013 for the Sitcum Waterway Remediation Project (Figure 1) for the Port of Tacoma (Port). Groundwater quality monitoring is associated with the Milwaukee Waterway nearshore confined disposal site (containment facility), which was filled with contaminated sediment and completed in 1995.

The purpose of Stage 1 monitoring is to collect data to determine if certain constituents are being leached from the fill material and transported outside the fill area by groundwater. The purpose of the overall groundwater monitoring program is to protect surface water quality from contaminants, which could potentially migrate in groundwater from the Milwaukee Waterway containment facility.

The performance standard for this monitoring program is marine chronic criteria or ambient surface water quality if ambient concentrations are greater than the marine criteria. The point of compliance for this performance standard is the sediment/surface water interface outside of the containment facility berm and peninsulas.

The Stage 1 Groundwater Quality Monitoring Plan (Port 1998) set forth the wells to be monitored and the analyses to be conducted as part of the first round of Stage 1 monitoring. The first round was completed in March 2003 (Port 2003a).

As part of the Stage 1 data evaluation program, the monitoring results were compared to baseline conditions established during the baseline groundwater monitoring program as specified in the Operations, Maintenance, and Monitoring Plan (OMMP) for the Sitcum Waterway Remediation Project (Port 1994).

Baseline water quality monitoring included fifteen groundwater sampling and analysis events completed between March 1988 and November 1996. The baseline monitoring period ended with the November 1996 sampling event, when Stage 1 monitoring commenced. A minimum of eight baseline sampling events were completed for each monitoring well and results are documented in

the Baseline Groundwater Quality Data Report, Sitcum Waterway Remediation Project (Port 1997).

The groundwater sampling and analysis was consistent with the Groundwater Sampling Operations Manual (Appendix A) included in the 1994 OMMP, with some modifications agreed to by the Port and EPA (EPA 2003a and 2003b, and Port 2003b and 2004). Analytical methods for Stage 1 groundwater monitoring were modified from Contract Laboratory Program procedures followed for baseline groundwater monitoring with EPA concurrence. After discussions with EPA (Port 2003), the procedures for analyzing arsenic, copper, lead, and nickel were modified to achieve lower reporting limits. Modifications included preparing samples by reductive precipitation to remove salt interference and then analyzing samples by EPA Method 200.8, ICP-mass spectrometry. In its transmittal letter for Round 2 monitoring (Port 2008), the Port proposed to add zinc as an additional indicator metal to the analyte list, since zinc has increasingly been identified as a metal of concern at a number of sites in Commencement Bay. EPA concurred with these recommendations and zinc was added to the analysis regime in 2013. ALS/Columbia Analytical Services was the project laboratory.

2.0 STAGE 1 GROUNDWATER QUALITY MONITORING PROGRAM

2.1 Field Procedures

Stage 1 groundwater sampling was consistent with the Groundwater Sampling Operations Manual (Appendix A) of the 1994 OMMP, with modifications agreed to by the Port and EPA (EPA 2003a and 2003b, and Port 2003 and 2004).

The groundwater level was measured using an electronic well sounder in the monitoring wells before purging. Depths to groundwater were measured from the top of each well casing and converted to elevations as presented in Appendix A.

Monitoring wells were sampled with peristaltic pumps using low-flow groundwater sampling procedures. Disposable tubing was used to eliminate the potential for cross contamination during sampling. Each well was purged until field parameters stabilized before sampling.

During well purging prior to sample collection, the following groundwater field parameters were monitored using a Horiba U-22 Water Quality Monitor equipped with a flow-through cell:

- Turbidity in nephelometric turbidity units (NTU);
- Temperature in degrees Celsius (°C);
- Dissolved Oxygen (DO) in milligrams per liter (mg/L);
- Oxidative Reduction Potential (ORP) in millivolts (mV);
- pH; and
- Specific Conductance (EC) in millisiemens per centimeter (mS/cm).

In accordance with the OMMP and modifications agreed to by the Port and EPA, purging was conducted until EC and turbidity measurements were stable (three successive measurements within ± 10 percent). Temperature, DO, ORP, and pH readings were also recorded during purging. The last set of pre-sampling field parameter measurements is presented along with the laboratory groundwater quality data in Table 1. Appendix A provides copies of the field sampling forms that contain the field parameter measurements collected during purging.

The samples collected for dissolved metals testing were filtered in the field using an in-line 0.45-micron filter, and saved in certified clean containers containing an appropriate preservative. The groundwater samples were collected in pre-preserved, certified clean containers provided by the laboratory. Upon collection, the samples were stored in a cooler and packed with blue ice. An appropriate chain of custody protocol was followed for sample tracking. The samples were delivered by overnight courier to CAS.

The following six baseline monitoring wells (Figure 2) were sampled during the Third Round of Stage 1 groundwater quality monitoring:

- MW-1 and MW-1A located upgradient of the containment facility;
- MW-5 and MW-7 located on the former Puyallup peninsula;
- MW-10 located within the closure berm; and
- MW-12 located on the former Sitcum peninsula.

In addition, monitoring well MW-14, located within the containment facility, was also sampled.

Groundwater samples collected from MW-14, while not part of the baseline monitoring program and not used to establish baseline conditions for performance monitoring, were used to provide data on geochemical conditions within the fill.

General groundwater conditions for the baseline wells and MW-14 were consistent with previous sampling events. Groundwater elevations were within

historical limits, and turbidity, temperature, pH, and conductivity were also comparable.

Samples were collected on March 19, 2013. Due to zero percent laboratory matrix spike recovery for dissolved arsenic, more samples were collected on April 16, 2013. Samples collected from this second event were analyzed for dissolved arsenic only. Sampling protocols for both events were consistent with the procedures outlined above.

2.2 Laboratory Analyses

Stage 1 groundwater samples were submitted to CAS for analysis of the following parameters:

- Dissolved arsenic, copper, lead, and nickel as indicators of potential contaminant migration from the containment facility (Port 1997);
- Salinity and total organic carbon (TOC) to monitor for potential salt wash-out effects (Port 1997); and
- Zinc was added to the list of analytes following the Port's request and EPA concurrence, and analysis of conventional water quality parameters (anions and common cations) was discontinued.

Groundwater samples collected from well MW-14 (within the containment facility), while not part of the baseline monitoring program and not used to establish baseline conditions for performance monitoring, were also analyzed for the parameters listed above to provide additional data on geochemical conditions within the containment facility.

Samples for baseline monitoring were analyzed using EPA CLP procedures. After discussions with EPA, procedures for analyzing arsenic, copper, lead, and nickel were modified from those specified in the OMMP to achieve lower reporting limits and to remove saltwater interference (EPA 2003a, 2003b). Stage 1 monitoring samples for metal analyses were prepared by reductive precipitation and were analyzed by EPA Method 200.8, ICP-mass spectrometry.

3.0 ANALYTICAL RESULTS

Laboratory analytical results for Round 3 of Stage 1 monitoring are summarized in Table 1. For comparative purposes, Tables 3 through 9 provide historical

monitoring data for the baseline wells sampled for the current event and for well MW-14. The laboratory reports from ALS/CAS are in Appendix B.

Arsenic was not detected in either the initial or reanalysis of the six Stage 1 monitoring wells and MW-14. Table 1 and Tables 3 through 8 present arsenic results for the reanalysis.

Copper was detected in all Stage 1 monitoring wells and in MW-14 at concentrations at or slightly above the method reporting limit of 0.1 µg/L. Sample concentrations were below the marine chronic water quality criterion (i.e. criteria continuous concentration – CCC) of 3.1 µg/L.

Lead was detected in one Stage 1 well (MW-1A). This concentration was only slightly above the method reporting limit of 0.02 µg/L and was below the CCC of 8.1µg/L.

Nickel was detected in all Stage 1 monitoring wells and in MW-14. These concentrations were slightly above the method reporting limit (0.2 µg/L) and were below the CCC of 8.2 µg/L.

Zinc was detected in four Stage 1 monitoring wells (MW-1A, MW-7, MW-10, and MW-12) and in MW-14. The concentrations were only slightly above the method reporting liming of 0.5 µg/L and well below the CCC of 81 µg/L.

Based on analysis of indicator metals and conventional parameters, there appears to have been little or no change in containment facility fill conditions in MW-14 since post-construction baseline sampling in 1996 (Table 9).

Chemical analyses were performed following the specifications of the Quality Assurance Project Plan (QAPP) for Groundwater Quality Analysis, a component of the OMMP (Port 1994), with modifications agreed to by the Port and EPA. Laboratory analytical data underwent two levels of quality assurance/quality control (QA/QC) evaluation. The initial data reduction, evaluation, and reporting were carried out by the analytical laboratory. The second level of data validation was performed independently by Hart Crowser. Chemical data were reviewed for the following, as appropriate to the particular analysis:

- Holding times;
- Instrument calibration;
- Blanks;
- Detection limits;
- Duplicates, blank spikes, and standard reference materials;
- Precision and accuracy;

- Completeness; and
- Data report formats.

Results are acceptable for use as reported with the following exceptions:

- Dissolved nickel results in all associated samples (MW-10, MW-14, MW-1400, MW-12, MW-1, MW-1a, MW-5, and MW-7) qualified as estimated (J) due to low matrix spike recovery;
- Dissolved arsenic results were rejected (R) in associated samples due to zero percent matrix spike recovery (samples were spiked at 5 times the method detection limit) for samples collected on March 18 and 19;
- Dissolved zinc results in MW-14 and its field duplicate sample (MW-1400) were qualified as estimated (J) due to the relative percent difference exceeding criteria; and
- Dissolved arsenic results in all associated samples collected on April 16 qualified as estimated (J) due to low matrix spike recovery (samples were spiked at 10 times the method detection limit).

The data validation report with laboratory summary forms is presented in Appendix B.

Groundwater data will be input to the Washington State Department of Ecology Environmental Information Management (EIM) database. The Port will notify EPA once data are input to the EIM system.

4.0 COMPARISONS TO BASELINE MONITORING RESULTS

4.1 Control Chart Procedure

Shewart-CUSUM control charts are the recommended statistical procedure in the 1994 OMMP for detecting changes in analyte concentrations in a well in comparison to baseline measurements as a component of the Stage 1 monitoring. Baseline and Stage 1 groundwater quality data used to construct Shewhart-CUSUM control charts for indicator metals for the six baseline monitoring wells are presented in Tables 3 through 8. Historical and Stage 1 groundwater quality data for MW-14 are presented in Table 9.

The combined Shewhart-CUSUM control chart is the only statistical procedure that is directly recommended for use in intra-well monitoring by the EPA (EPA 1989 and 1992), hence, its widespread use. The control chart procedure is described in Section 7 of EPA's Interim Final Guidance document, "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities" (EPA 1989). The

EPA Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (EPA 2009) was reviewed to determine if the CuSum approach should be revised based on the new guidance. Our review of the new guidance (Appendix C) determined that the current Shewart-Cumulative Sum control chart procedure with substitution of the reporting limit for non-detect results should continue to be used.

The combined Shewhart-CUSUM control chart establishes two control limits to provide a sensitive early warning of increasing groundwater chemical concentrations. The CUSUM limit, normally 5 standard deviations above the baseline mean, is the threshold value that, if exceeded by the cumulative sum, indicates a statistically significant increase in groundwater constituent concentrations. The Shewhart control limit (SCL), normally 4.5 standard deviations above the baseline mean, is the concentration that, if exceeded in a sample, indicates an immediate release above background.

Procedures used to develop control charts include the following:

- Data are assumed to follow normal distributions. Distributions could not be unequivocally determined because of the large number of undetected results for indicator metals. However, conclusions from control charts using normal or lognormal distributions would be identical.

- Reporting limits are used for non-detected baseline and Stage 1 monitoring results. The reporting limit is defined as the lowest reproducible concentration at which a chemical can be accurately and reproducibly quantitated for a given sample. It normally corresponds to the lowest calibration standard (practical quantitation limit) but for metals, which use a one-point calibration, it is set as a multiple of the method detection limit.

- Statistical parameters used for construction of Shewhart-CUSUM control charts are:
  - "h" (CUSUM limit, decision interval value) = 5 standard deviations above baseline monitoring mean concentration;
  - "k" (reference value) = 1; and
  - "SCL" (Shewhart control limit) = 4.5 standard deviations above baseline monitoring mean concentration.

Baseline monitoring results, while not usually presented on Shewhart-CUSUM control charts, were added to allow a visual comparison of results over the baseline and Stage 1 monitoring rounds. Curve smoothing, rather than line segments between data points, is the default for the software routine used to

create control charts and does not impact the conclusion that concentrations are unchanged from baseline results and have not exceeded control limits.

Using results for arsenic in MW-5 as an example (Table 5), the baseline monitoring average concentration is 4.9 µg/L (using the detection limit for non-detects) with a standard deviation of 2.1 µg/L. The SCL (4.5 times the standard deviation above the mean) is 14.4 µg/L and the CUSUM limit (5 times the standard deviation above the mean) is 15.5 µg/L (Figure 11). If the cumulative sum (plotted blue line) exceeds either of these warning limits, an increase above baseline is indicated.

The control charts for arsenic, copper, lead, and nickel for the six Stage 1 monitoring wells are presented on Figures 3 through 26. Control charts are not presented for zinc or for containment fill well MW-14 because they were not part of the baseline monitoring program and are not used for performance monitoring.

4.2 Results and Conclusions

The groundwater monitoring program was designed to detect and evaluate possible long-term changes in groundwater quality in the areas surrounding the containment facility to ensure compliance with the performance standards. Stage 1 monitoring compares groundwater quality (all rounds) to baseline conditions. Based on Stage 1 monitoring results, the monitoring program indicates that the performance standard at the point of compliance has not been exceeded. This is easily deduced because there have been no increases above baseline conditions, let alone any statistically significant increases, at a given well for any of the indicator metals.

Based on a review of the Shewhart-CUSUM control charts for indicator metals in the baseline wells presented on Figures 3 through 26, there were no increases above baseline conditions for any of the indicator metals in any of the Stage 1 sampling rounds. Neither the SCL nor the CUSUM warning limits were exceeded for any samples collected during the Stage 1 monitoring rounds. As Stage 1 monitoring indicated no statistically significant increases at any given well in any of the rounds of monitoring and concentrations were well below marine chronic water quality criteria, Stage 2 monitoring is not proposed.

As discussed in Section 2.2, dissolved arsenic, copper, lead, and nickel were analyzed as indicators of potential contaminant migration from the containment facility while salinity and TOC results are used to monitor potential salt wash-out effects that might remobilize metals. Conventional parameters including alkalinity, major cations (calcium, iron, manganese, magnesium, potassium, and

sodium), and anions (chloride, sulfate, sulfide, and total phosphate) were analyzed in baseline sampling events only to provide information on geochemical conditions within the containment facility. Conventional parameter results in samples from the six baseline monitoring wells were relatively unchanged over the baseline monitoring period (Port 1997). Therefore, conventional parameter analysis was not required for Stage 1 monitoring of these six wells.

Review of conventional parameter data for MW-14 covering six sampling events between August 1996 and March 2008 (Table 9) confirms that conventional analyte concentrations are also relatively constant at the MW-14 well location within the facility fill. In its transmittal letter (Port 2008) for the draft Second Round of Stage 1 groundwater monitoring report, the Port requested that analysis of major cations (calcium, iron, manganese, magnesium, potassium, and sodium), anions (chloride, sulfate, sulfide, and total phosphate), and alkalinity be discontinued based on the consistency of conventional parameters over the past 12 years, and the fact that these analytes are not indicators of contamination. As a result, analysis for cations, anions and alkalinity was not performed during the Third Round of Stage 1 monitoring.

5.0 REFERENCES

EPA 1989. Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities. Interim Final Guidance. Office of Solid Waste, Waste Management Division. April 1989.

EPA 1992. Addendum to Interim Final Guidance Document: Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities. Interim Final Guidance. Office of Solid Waste, Waste Management Division. July 1992.

EPA 2003a. Letter to Port Approving Change in Analytical Method for Metals from CLP Methodology to EPA Methods 200.8 and 6010B. September 24, 2003.

EPA 2003b. Letter to Port Clarifying Sampling and Analysis Procedures for Future Stage 1 Groundwater Quality Monitoring. October 14, 2003.

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Port 1994. Operations, Maintenance, and Monitoring Plan, Sitcum Waterway Remediation Project, June 3, 1994.

Port 1997. Baseline Water Quality Data Report, Sitcum Waterway Remediation Project, Tacoma, Washington. May 9, 1997.

Port 1998. Letter from Richard Gilmur to Christina Ngo, EPA Remedial Project Manager. February 11, 1998.

Port 2003a. Stage 1 Groundwater Quality Monitoring Data Report (Round 1), Sitcum Waterway Remediation Project, Port of Tacoma, Washington. November 20, 2003.

Port 2003b. Teleconference with Richard Gilmur (Port), Roger McGinnis (Hart Crowser), Karen Keeley (EPA Remedial Project Manager), and Dr. Bruce Woods (EPA QA). April 2003.

Port 2004. Letter to EPA re: Revisions to Stage 1 Groundwater Quality Monitoring QAPP, Sitcum Waterway Remediation Project. January 6, 2004.

Port 2008. Letter to EPA re: Sitcum Waterway Consent Decree (C93-5462), Groundwater Quality Monitoring Report, Stage 1, Second Round (2008). June 2, 2008.

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Table 1 - Analytical Results for Groundwater Samples from Stage 1, Round 3

Sample ID	MW-1	MW-1A	MW-5	MW-7	MW-10	MW-12	MW-14	MW-1400
Sampling Date	3/19/2013	3/19/2013	3/19/2013	3/19/2013	3/19/2013	3/19/2013	3/19/2013	3/19/2013
								MW-14 Duplicate
Conventionals in mg/L								
Total Organic Carbon	14	5.9	7.6	21	1	5	14	14
Salinity (g/kg)	2	2	11.1	19.2	19.6	22.3	23.6	23.7
Dissolved Metals in µg/L								
Arsenic[a]	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
Copper	0.2	0.2	0.1	0.2	0.4	0.1	0.2	0.3
Lead	0.02 U	0.02	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Nickel	0.7 J	0.9 J	1.1 J	0.4 J	1.5 J	0.8 J	0.9 J	1 J
Zinc	0.5 U	0.7	0.5 U	0.9	1	0.7	1.4 J	2.3 J
Field Parameters								
pH	7.88	8.32	8.03	7.81	7.5	7.86	7.49	7.49
Temperature in °C	14.5	14.2	13.2	13.5	12.4	13.7	12.7	12.7
Conductivity in mS/cm	0.649	0.336	17.7	27.1	29.7	31.2	34.4	34.4
Dissolved Oxygen in mg/L	3.39	3.47	0.3	6.99	6.6	12.2	9.09	9.09
Turbidity in NTU	9.8	1.9	2.1	21	1.3	1.6	1.2	1.2
ORP	1	-16	-87	23	99	34	34	34

a - Arsenic data for samples collected 3/19/2013 were rejected. Arsenic results are for samples recollected on 4/16/013

Table 2 - Monitoring Well Coordinates

Well ID	Northing	Easting
MW-1*	708437	1165208
MW-1A*	708439	1165175
MW-2	NA	NA
MW-3	NA	NA
MW-4	710175.9228	1164812.389
MW-4A	NA	NA
MW-5*	709724	1163887
MW-5A	NA	NA
MW-7	710872.5977	1163196.621
MW-8	710310.7201	1163514.845
MW-9*	710995	1163102
MW-10*	711320	1163495
MW-11	711581.2729	1163723.75
MW-12*	711055	1164178
MW-13	710631.1642	1164537.682
MW-14*	710196	1164036
Unknown* (near MW-12)	711066	1164287

Notes:

Horizontal Datum is Washington State Plane Coordinates (South Zone in Feet), NAD83

* Measured in the field in April 2008. The coordinates of the remaining wells were obtained from a previous survey conducted in 1996

NA: Not available

Table 3 - MW-1 Baseline and Stage 1 Groundwater Monitoring Quality Data

Well ID	Sampling Date	Arsenic in ug/L	Copper in ug/L	Lead in ug/L	Nickel in ug/L	Zinc in mg/L	Salinity in g/kg	TOC in mg/L
MW-1	3/1/1988	5 U	2	5 U	2 U		0.3	12
MW-1	6/1/1989	5 U	1 U	5 U	2 U		0.41	24
MW-1	10/1/1989	5 U	3	5 U	2 U		0.3	14
MW-1	9/1/1990	5 U	2.9 U	3 U	7.1 U		0.35	12
MW-1	2/1/1991	5 U	1 U	3 U	2 U		0.31	13
MW-1	10/1/1991	1 U	1.1 U	1 U	0.3 U		0.32 J	11
MW-1	5/11/1993	3 U	0.4 U	1 UJ	0.6 U		0.35	15
MW-1	2/15/1995	5 U	1.5 U	1 U	0.87 U		0.37	17
MW-1	8/14/1995	5 U	0.46 U	1.8 U	0.4 U		0.25	26
MW-1	2/20/1996	5 U	4.5 U	1.6 UJ	0.49 U		0.32	17
MW-1	8/14/1996	1 UJ	0.65 U	1 U	0.5 U		0.34 U	30
MW-1	3/26/2003	0.5 U	0.1 U	0.04	0.2 U		2 U	8.3
MW-1	3/28/2008	0.5 UJ	0.1 U	0.02 U	0.2 U		0.2 U	21.6
MW-1	3/19/2013	0.5 UJ	0.2	0.02 U	0.7 J	0.5 U	2	14

U - Not detected at the indicated reporting limit.
J - The associated value is an estimated quantity.
Note - Arsenic data for samples collected 3/19/2013 were rejected. Arsenic results are for samples recollected on 4/16/013.

Table 4 - MW-1A Baseline and Stage 1 Groundwater Monitoring Quality Data

Well ID	Sampling Date	Arsenic in ug/L	Copper in ug/L	Lead in ug/L	Nickel in ug/L	Zinc in mg/L	Salinity in g/kg	TOC in mg/L
MW-1A	3/1/1988	5 U	3	5 U	4		0.48 U	18
MW-1A	6/1/1989	5 U	1 U	5 U	2 U		0.88	34
MW-1A	10/1/1989	5 U	4	5 U	2 U		0.7	25
MW-1A	9/1/1990	5 U	2.9 U	10 U	7.1 U		1.02	19
MW-1A	2/1/1991	5 U	1 U	4.8	2 U		1	22
MW-1A	10/1/1991	1 U	1.1 U	1 U	1.5 U		0.82 J	35
MW-1A	5/11/1993	3 U	4 U	1 UJ	6 U		1.03	24
MW-1A	2/15/1995	5 U	53	1 U	50 U		1.3	27
MW-1A	8/14/1995	5 U	2 U	1 U	4 U		0.88	44
MW-1A	2/20/1996	5 U	3.6 U	8 J	6.7		0.88	25
MW-1A	8/14/1996	1 UJ	0.64 U	1 U	0.71 J		0.95	34
MW-1A	3/26/2003	0.5 U	0.1	0.02 U	0.2 U		2 U	31
MW-1A	3/28/2008	0.5 UJ	0.1 U	0.05	0.4		2 U	30.4
MW-1A	3/19/2013	0.5 UJ	0.2	0.02	0.9 J	0.7	2	5.9

U - Not detected at the indicated reporting limit.
J - The associated value is an estimated quantity.
Note - Arsenic data for samples collected 3/19/2013 were rejected. Arsenic results are for samples recollected on 4/16/013.

Table 5 - MW-5 Baseline and Stage 1 Groundwater Monitoring Quality Data

Well ID	Sampling Date	Arsenic in ug/L	Copper in ug/L	Lead in ug/L	Nickel in ug/L	Zinc in mg/L	Salinity in g/kg	TOC in mg/L
MW-5	3/1/1988	5 U	2 J	10 U	4 J		24.38	3.9
MW-5	6/1/1989	5 U	15 U	30 U	15 U		24.99	21
MW-5	10/1/1989	5 U	5 U	10 U	5 U		24.5	7.8
MW-5	9/1/1990	5 U	2.9 U	10 U	7.1 U		25.15	7.2
MW-5	3/1/1991	5 U	1 U	3 U	2 U		25	6.8
MW-5	10/1/1991	10 UJ	11 U	10 U	3 U		24.66	10
MW-5	5/11/1993	3 U	4 U	20 UJ	6 U		23.98	9.2
MW-5	2/15/1995	5 U	30 U	1 UJ	50 U		18	10
MW-5	8/14/1995	5 U	2 U	1 U	4 U		17.92	21
MW-5	2/20/1996	5 U	4.9 U	12.2 J	7.2		17.54	12
MW-5	8/14/1996	1 UJ	0.3 U	1 U	0.5 UJ		16.92	17
MW-5	3/26/2003	0.5 U	0.1 U	0.02	0.2		13.8	11
MW-5	3/28/2008	0.5 UJ	0.1 U	0.02	0.3		12	11.9
MW-5	3/19/2013	0.5 UJ	0.1	0.02 U	1.1 J	0.5 U	11.1	7.6

U - Not detected at the indicated reporting limit.
J - The associated value is an estimated quantity.
Note - Arsenic data for samples collected 3/19/2013 were rejected. Arsenic results are for samples recollected on 4/16/013.

Table 6 - MW-7 Baseline and Stage 1 Groundwater Monitoring Quality Data

Well ID	Sampling Date	Arsenic in ug/L	Copper in ug/L	Lead in ug/L	Nickel in ug/L	Zinc in mg/L	Salinity in g/kg	TOC in mg/L
MW-7	3/1/1988	5 U	5 U	10 U	2 J		21.83	24
MW-7	6/1/1989	5 U	15 UJ	30 UJ	15 UJ		23.06	82
MW-7	10/1/1989	5 U	5 U	10 U	5 U		22.6	43
MW-7	9/1/1990	5 U	2.9 U	10 U	7.1 U		22.81	29
MW-7	2/1/1991	5 U	1 U	3 U	2 U		23	30
MW-7	10/1/1991	10 U	11 U	10 U	3 U		22.97	210
MW-7	5/11/1993	3 U	4 U	20 UJ	6 U		22.46	40
MW-7	2/15/1995	5 U	30 U	1 UJ	50 U		23	32
MW-7	8/14/1995	5 U	2 U	1 UJ	4 U		22.57	49
MW-7	2/20/1996	5 U	2 U	3.3 J	4.2		22.59	29
MW-7	8/14/1996	1 UJ	0.44 U	1 U	0.5 UJ		22.14	44
MW-7	3/26/2003	0.5 U	0.1 U	0.03	0.2 U		22.3	22
MW-7	3/28/2008	0.5 UJ	0.1 U	0.02 U	0.2 U		21	31.9
MW-7	3/19/2013	0.5 UJ	0.2	0.02 U	0.4 J	0.9	19.2	21

U - Not detected at the indicated reporting limit.
J - The associated value is an estimated quantity.
Note - Arsenic data for samples collected 3/19/2013 were rejected. Arsenic results are for samples recollected on 4/16/013.

Table 7 - MW-10 Baseline and Stage 1 Groundwater Monitoring Quality Data

Well ID	Sampling Date	Arsenic in ug/L	Copper in ug/L	Lead in ug/L	Nickel in ug/L	Zinc in mg/L	Salinity in g/kg	TOC in mg/L
MW-10	2/16/1995	5 U	30 U	1 U	50 U		30	2.7
MW-10	5/18/1995	5 U	3 U	1 UJ	5 U		28.64	2.5
MW-10	8/16/1995	5 U	2 U	1.8	4 U		24.75	2.6
MW-10	11/14/1995	5 U	2 U	1 U	3 UJ		23.15	1.7
MW-10	2/22/1996	5 U	2 U	2 J	6		20.25	2
MW-10	5/21/1996	5 U	5.6 U	0.1 UJ	13.5		17.14	4.7
MW-10	8/15/1996	1 UJ	1.4 U	1.1	5.2 J		18.48	4.6
MW-10	11/12/1996	5 U	2.5 U	1 UJ	4 U		17.38	4
MW-10	3/26/2003	0.5 U	0.1	0.03	0.9		21.9	0.7
MW-10	3/28/2008	0.5 UJ	0.2	0.07	0.9		21	0.9
MW-10	3/19/2013	0.5 UJ	0.4	0.02 U	1.5 J	1	19.6	1

U - Not detected at the indicated reporting limit.
J - The associated value is an estimated quantity.
Note - Arsenic data for samples collected 3/19/2013 were rejected. Arsenic results are for samples recollected on 4/16/013.

Table 8 - MW-12 Baseline and Stage 1 Groundwater Monitoring Quality Data

Well ID	Sampling Date	Arsenic in ug/L	Copper in ug/L	Lead in ug/L	Nickel in ug/L	Zinc in mg/L	Salinity in g/kg	TOC in mg/L
MW-12	2/16/1995	5 U	30 U	1 U	50 U		25	9.1
MW-12	5/17/1995	5 U	3 U	1 UJ	5 U		21.57	8.9
MW-12	8/15/1995	5 U	2 U	1 UJ	4 U		24	19
MW-12	11/14/1995	5 U	2.6 U	1 U	3 UJ		24.79	7.1
MW-12	2/21/1996	5 U	2.8 U	3.1 J	4 U		23.8	6.1
MW-12	5/20/1996	5 U	0.77 U	0.1 UJ	0.5 U		23.21	31
MW-12	8/16/1996	1 UJ	0.45 U	1 U	0.5 UJ		22.77	16
MW-12	11/12/1996	5 U	2.5 U	1 U	4 U		23.35	25
MW-12	3/26/2003	0.5 U	0.1 U	0.02 U	0.2 U		24.3	3.9
MW-12	3/28/2008	0.5 UJ	0.1	0.05	0.4		25	6.8
MW-12	3/19/2013	0.5 UJ	0.1	0.02 U	0.8 J	0.7	22.3	5

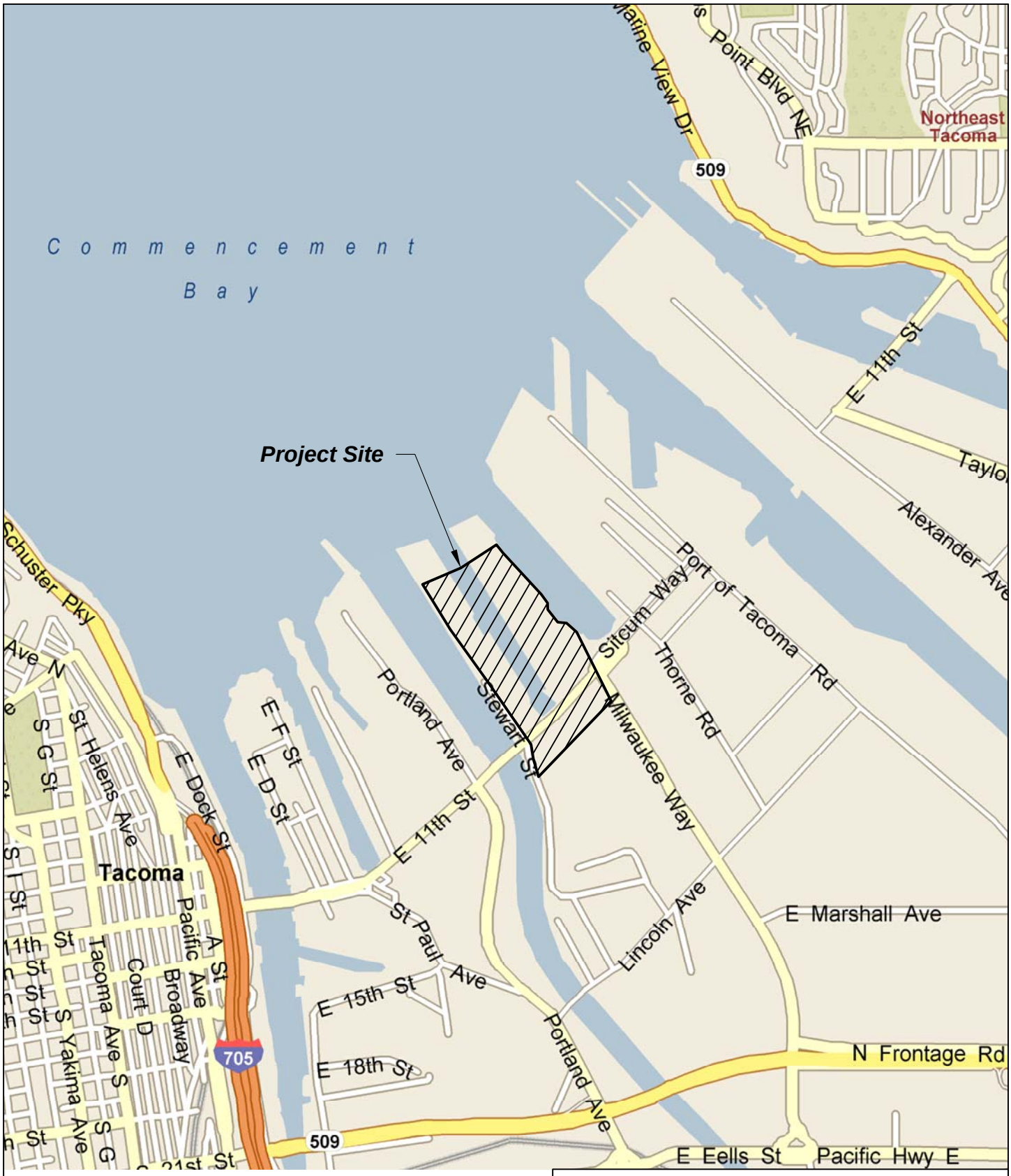
U - Not detected at the indicated reporting limit.
J - The associated value is an estimated quantity.
Note - Arsenic data for samples collected 3/19/2013 were rejected. Arsenic results are for samples recollected on 4/16/013.

Table 9 - MW-14 Historical and Stage 1 Groundwater Monitoring Quality Data

Well ID	Sampling Date	Arsenic in ug/L	Copper in ug/L	Lead in ug/L	Nickel in ug/L	Zinc in mg/L	Salinity in g/kg	TOC in mg/L	Alkalinity in mg/L	Calcium in ug/L	Iron in ug/L
MW-14	8/16/1996	1 UJ	1.4 U	1 U	2 J		27.99	14	680	372000	
MW-14	2/26/1997	5 U	4.7 U	2.5 U	6.4 J		25.52	9.4	690	312000	
MW-14	8/28/1997	5 U	0.95 U	1 U	0.65 U		26.36	16	770	316000	
MW-14	2/13/1998	5 U	4 U	1.3 J	4.7 J		26.09	16	810	311000	
MW-14	3/26/2003	2 U	0.9	0.11	1.4		25.9	10	1200	331000	3970
MW-14	3/28/2008	0.5	0.1 UJ	0.02	0.3 U		25	17.1	1640	288000	3290
MW-14	3/19/2013	0.5 UJ	0.2	0.02 U	0.9 J	1.4 J	23.6	14			

Well ID	Sampling Date	Manganese in ug/L	Magnesium in ug/L	Potassium in ug/L	Sodium in ug/L	Chloride in mg/L	Sulfate in mg/L	Sulfide in mg/L	Phosphate-P in mg/L
MW-14	8/16/1996		1140000	352000	8730000	16000	2000	2	7.2
MW-14	2/26/1997		993000	298000	7720000	14000	2300	1 U	7.4
MW-14	8/28/1997		1010000	305000	8190000	14000	1900	1 U	8.3
MW-14	2/13/1998		936000	298000	7360000	14000	2000	1 U	7.9
MW-14	3/26/2003	192	1050000	291000	8800000			2 U	
MW-14	3/28/2008	166	944000	269000	7800000	13900	736	0.05	9.85 U
MW-14	3/19/2013								

U - Not detected at the indicated reporting limit.
J - The associated value is an estimated quantity.
Blank indicates sample not analyzed for specific analyte.
Note - Arsenic data for samples collected 3/19/2013 were rejected. Arsenic results are for samples recollected on 4/16/013.



0 2000 4000
Scale in Feet

N

Sitcum Waterway - Remediation
Tacoma, Washington

Vicinity Map

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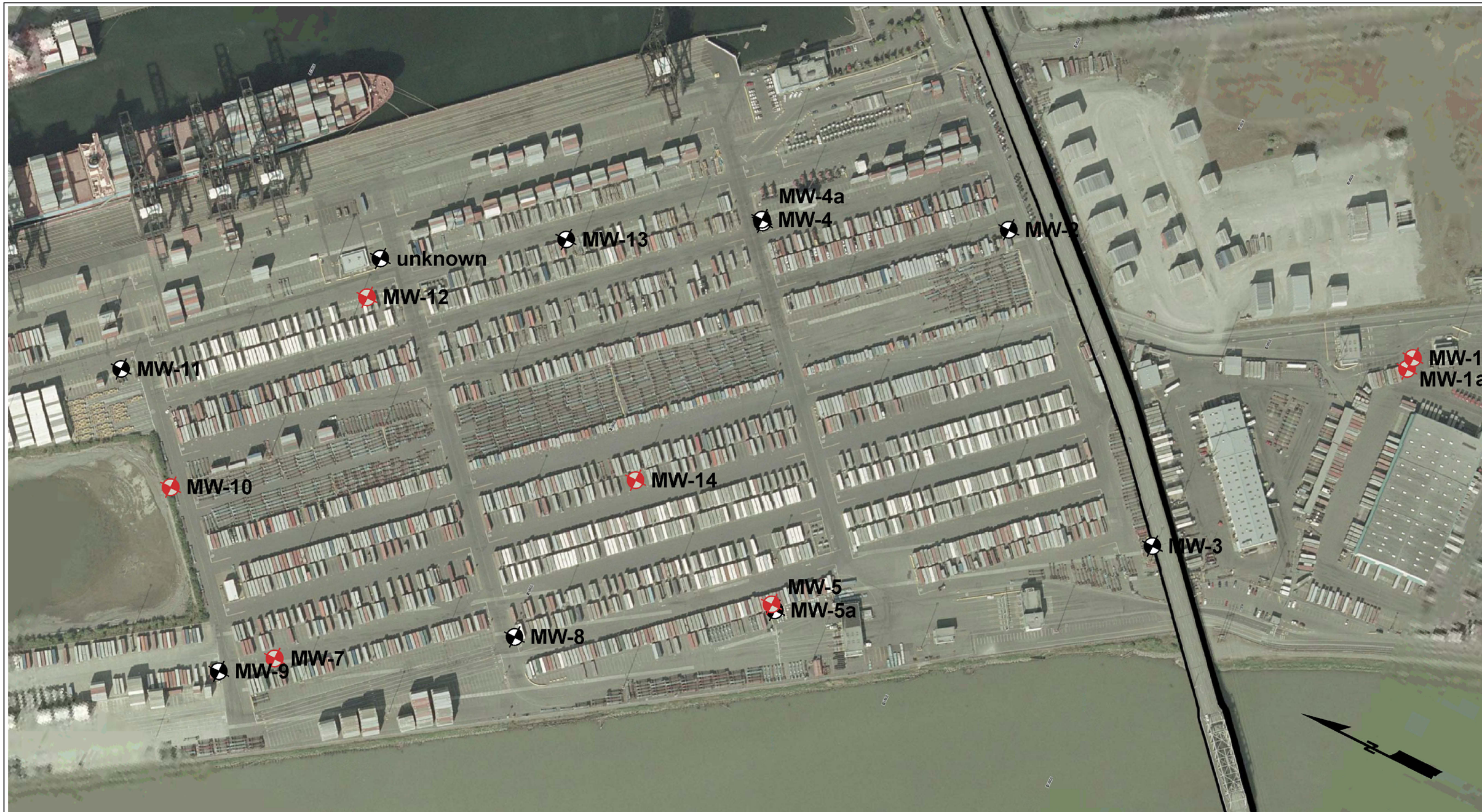
Figure
1

EAL 05/15/13 1747201-001.dwg



Note: Aerial photographs downloaded from Terraserver USA.

Monitoring Well Location and Number

MW-7 Sampled

MW-8 Not Sampled

0 250 500

Scale in Feet

Sitcum Waterway - Remediation
Tacoma, Washington

Site and Monitoring Well Location Plan

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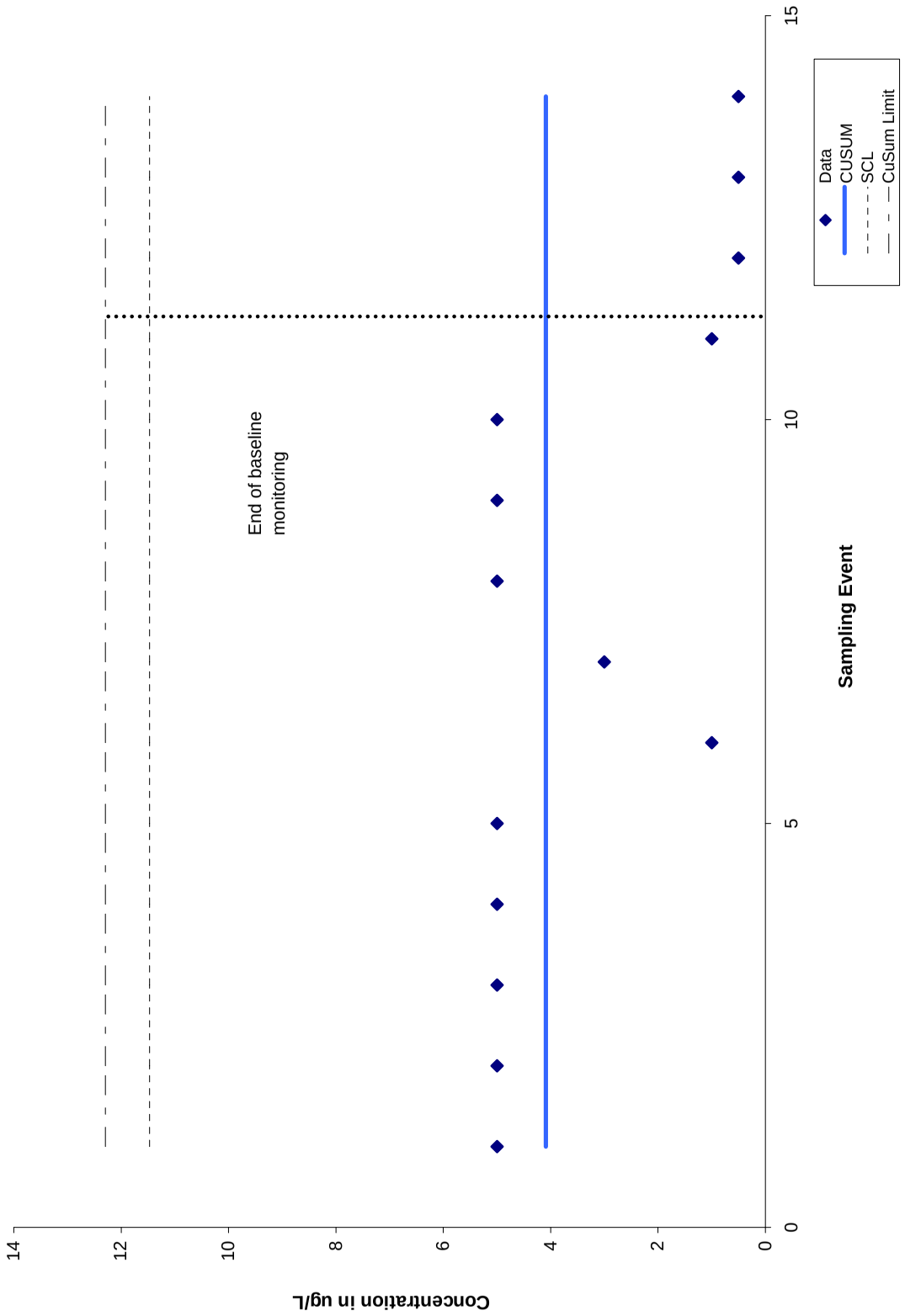
Figure **2**

EAL 05/15/13 17472-01-002.dwg



Sitcum Waterway - Remediation
Tacoma, Washington

MW-1 Arsenic Shewhart-CUSUM Control Chart

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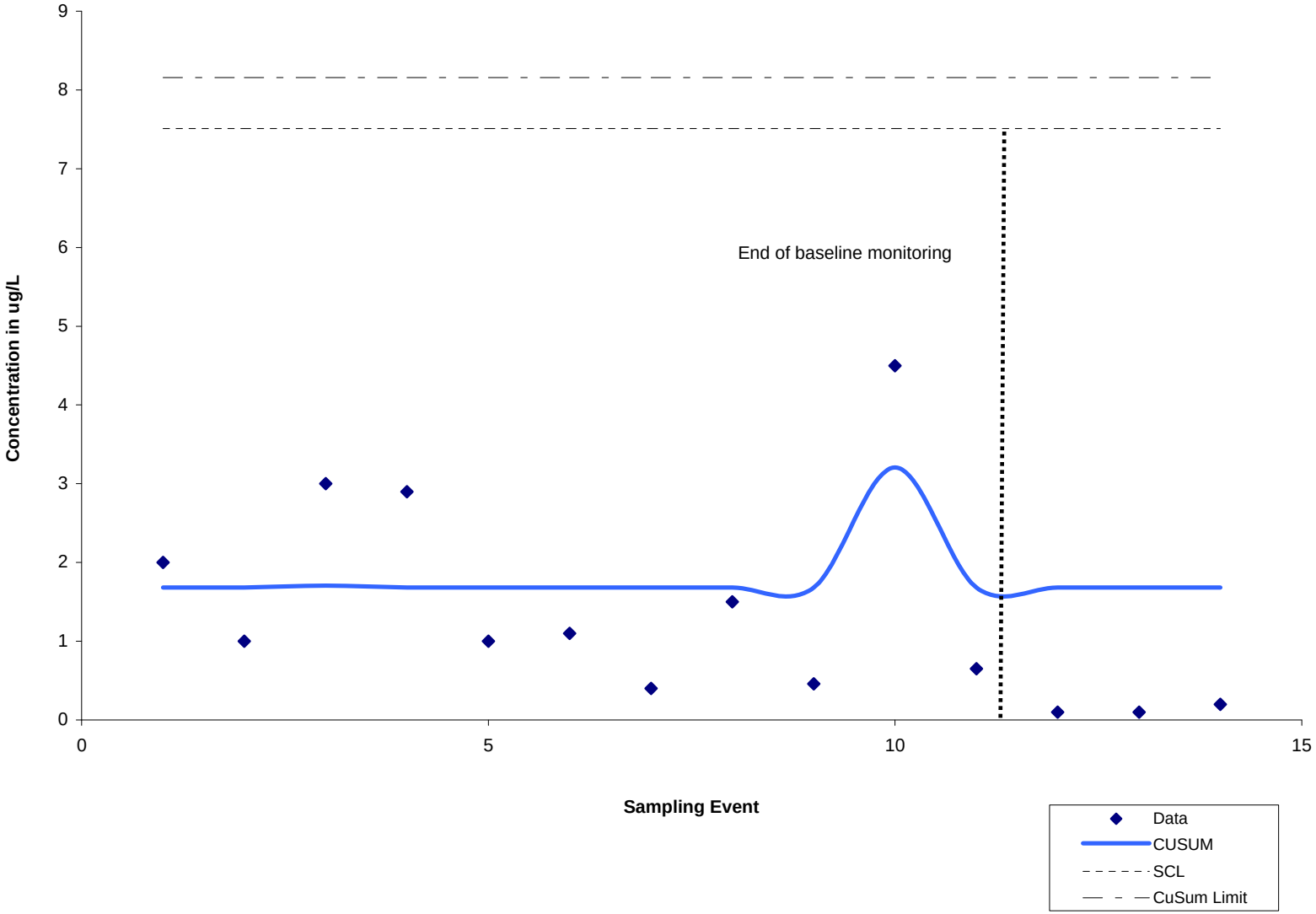
Figure **3**

EAL 05/15/13 1747201-AA.xls



Sitcum Waterway - Remediation
Tacoma, Washington

MW-1 Copper Shewhart-CUSUM Control Chart

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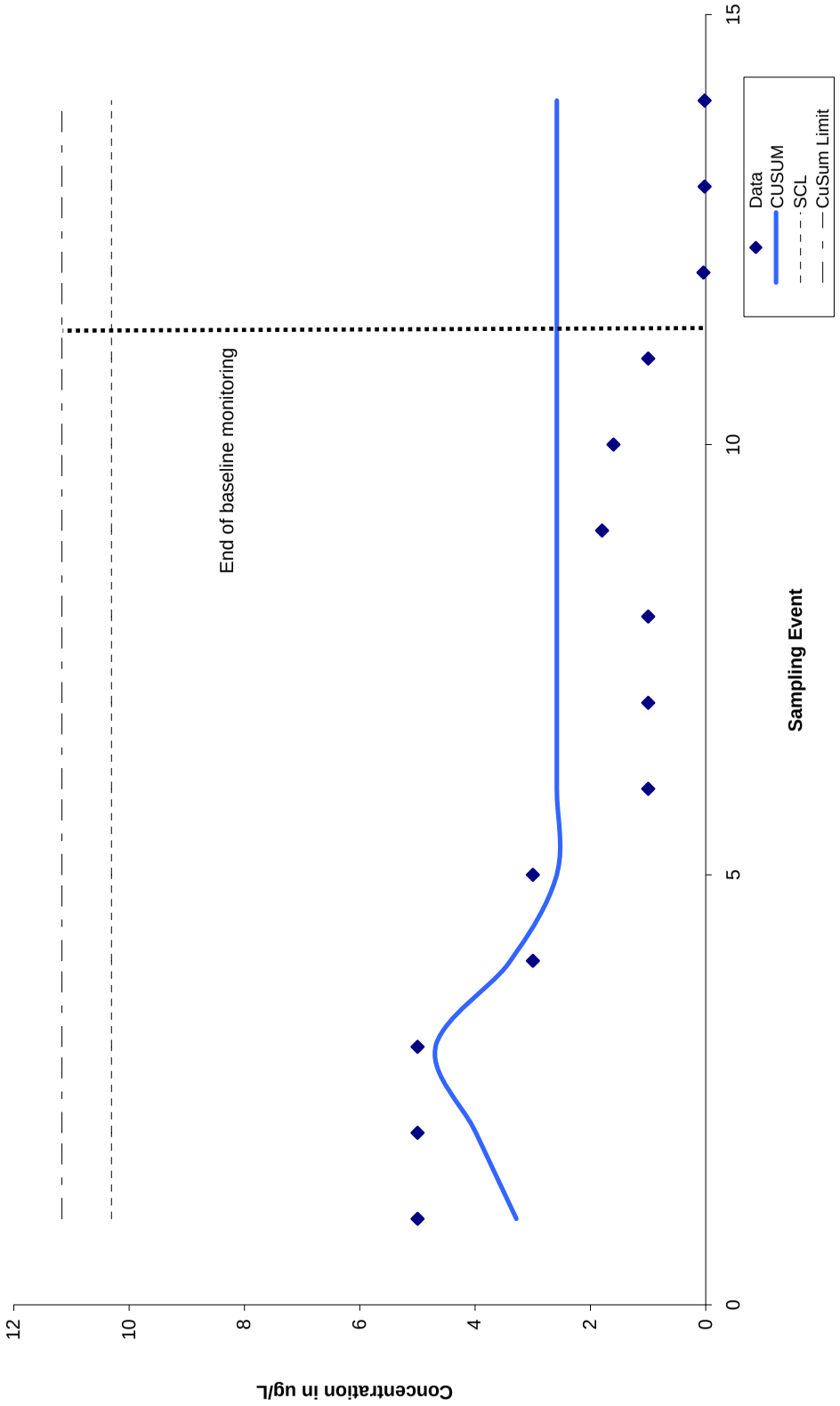
Figure 4



Sitcum Waterway - Remediation
Tacoma, Washington

MW-1 Lead Shewhart-CUSUM Control Chart

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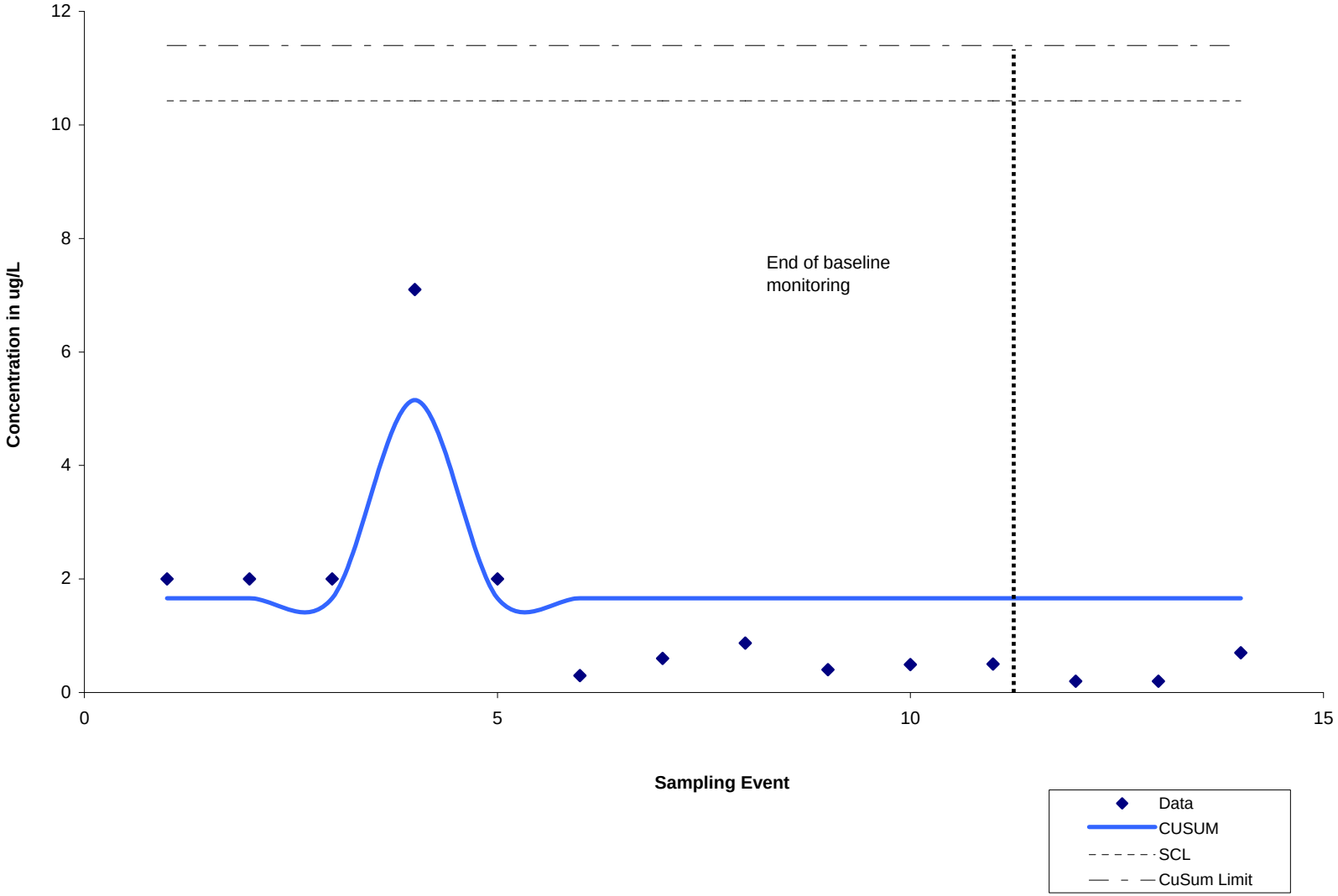
Figure

5

EAL 05/15/13 1747201-AC.xls



Sitcum Waterway - Remediation
Tacoma, Washington

MW-1 Nickel Shewhart-CUSUM Control Chart

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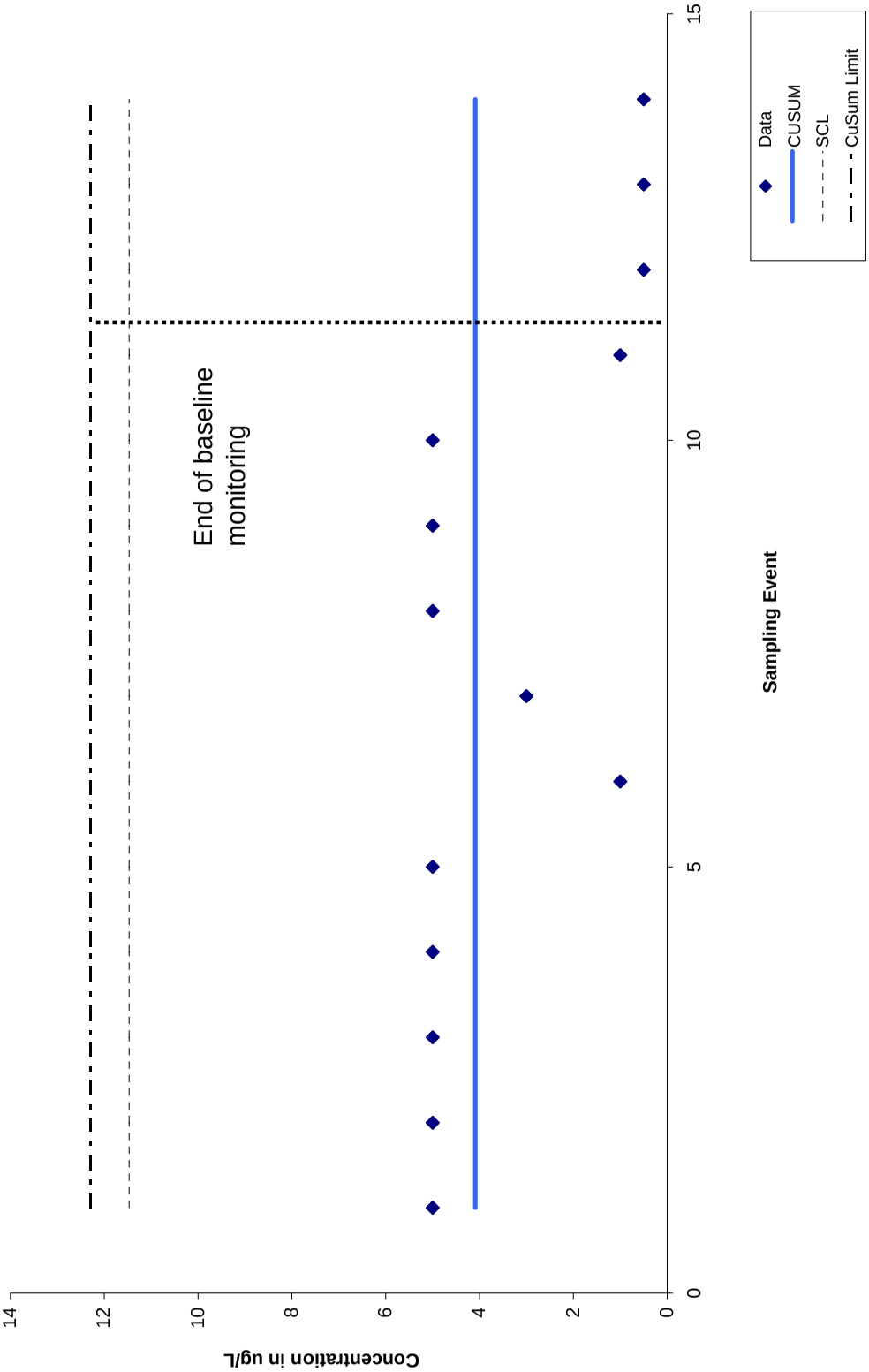
Figure 6



Sitcum Waterway - Remediation
Tacoma, Washington

MW-1A Arsenic Shewhart-CUSUM Control Chart

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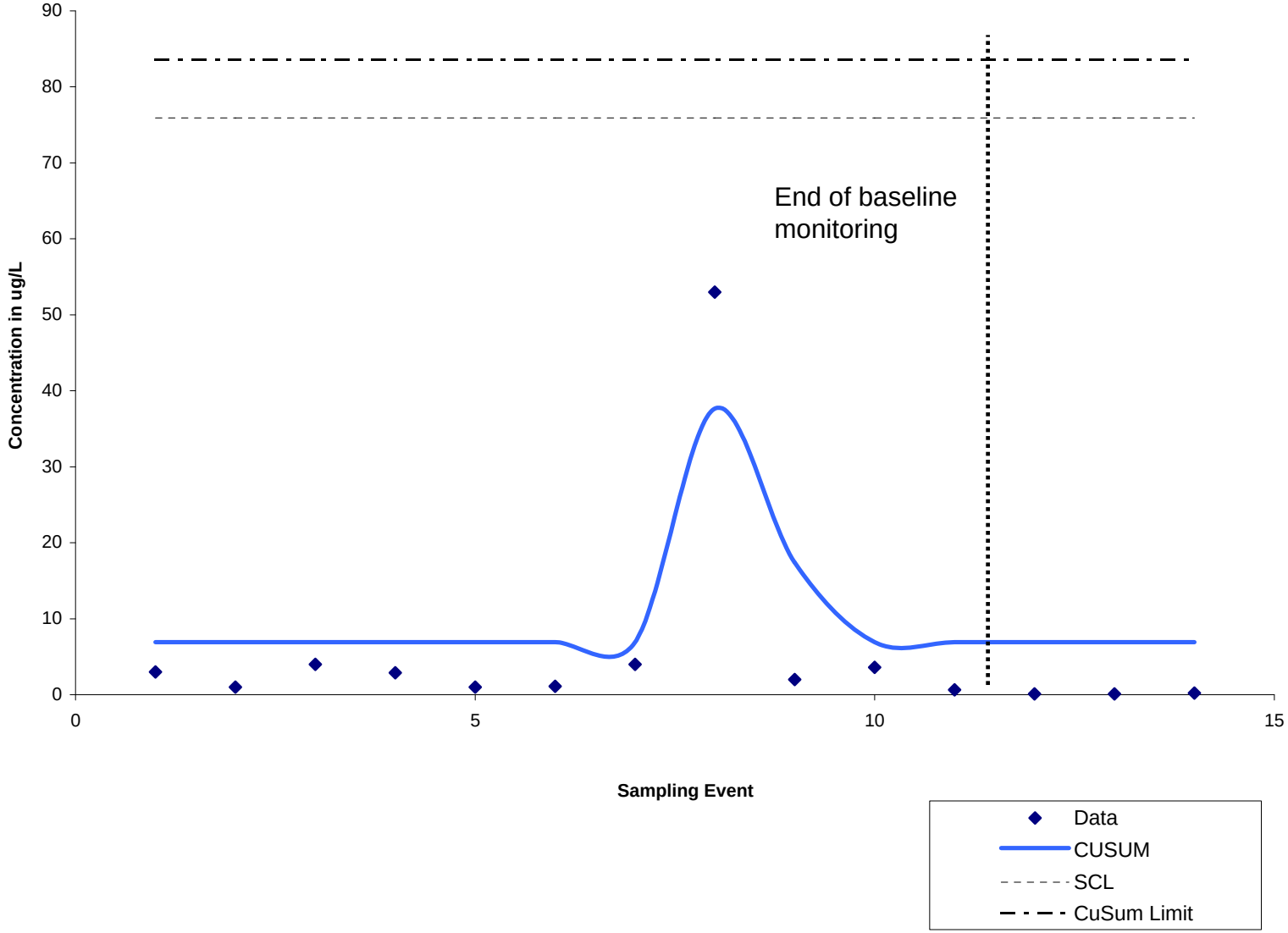
Figure **7**

EAL 05/15/13 1747201-AE.xls



Sitcum Waterway - Remediation
Tacoma, Washington

MW-1A Copper Shewhart-CUSUM Control Chart

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Figure 8

Sitcum Waterway - Remediation
Tacoma, Washington

MW-1A Lead Shewhart-CUSUM Control Chart

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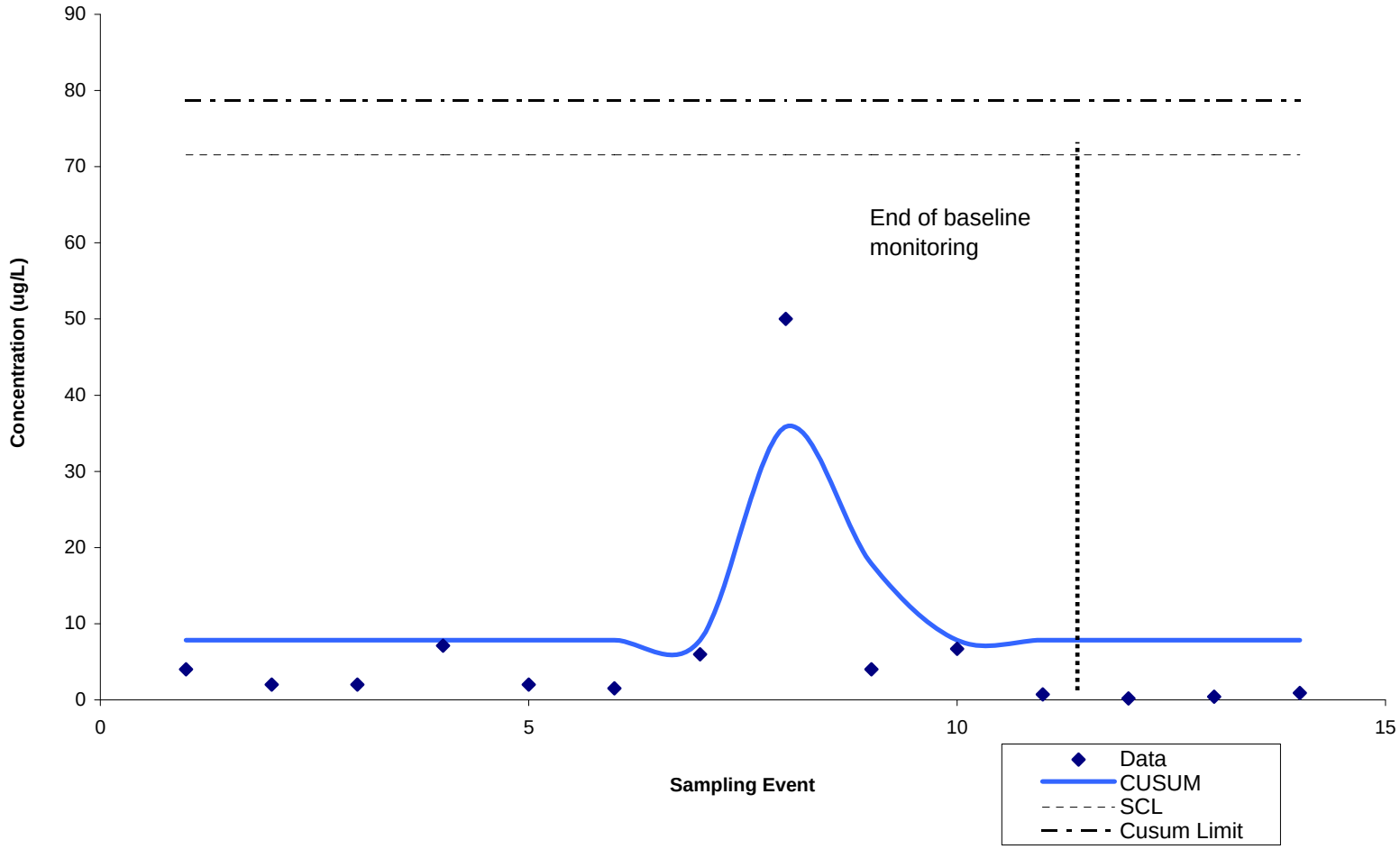
Figure 9



Sitcum Waterway - Remediation
Tacoma, Washington

MW-1A Nickel Shewhart-CUSUM Control Chart

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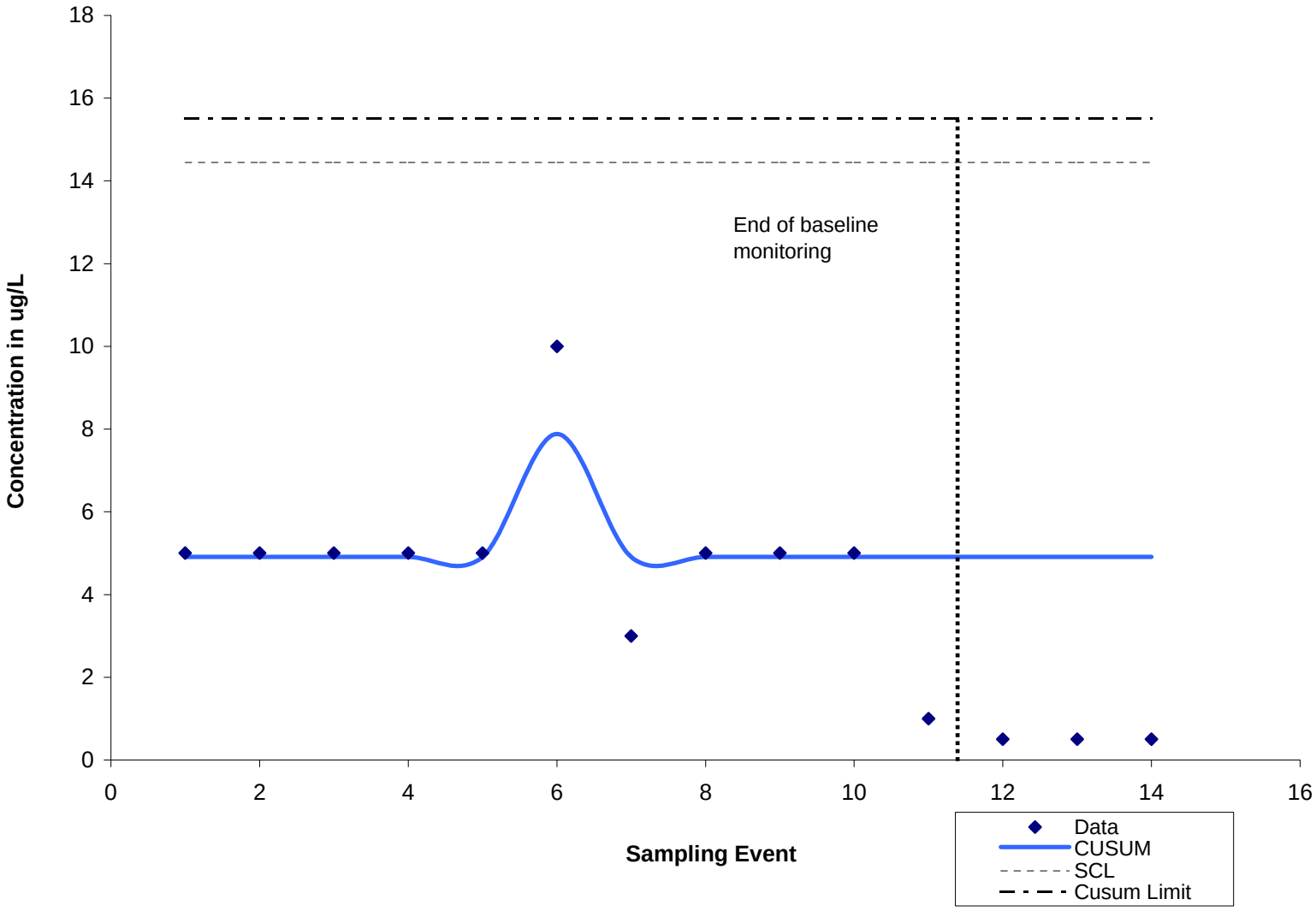
Figure **10**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-5 Arsenic Shewhart-CUSUM Control Chart

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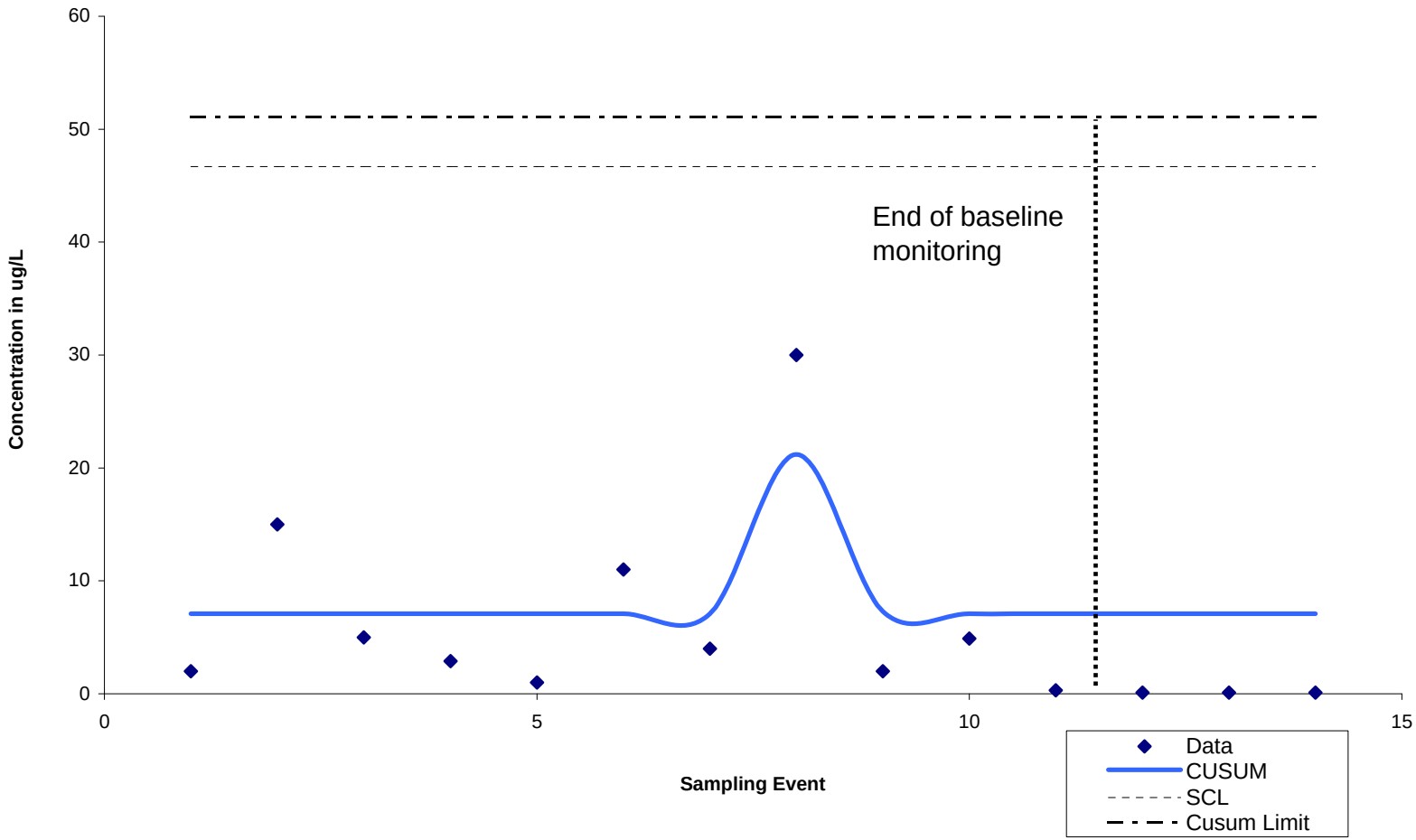
Figure **11**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-5 Copper Shewhart-CUSUM Control Chart

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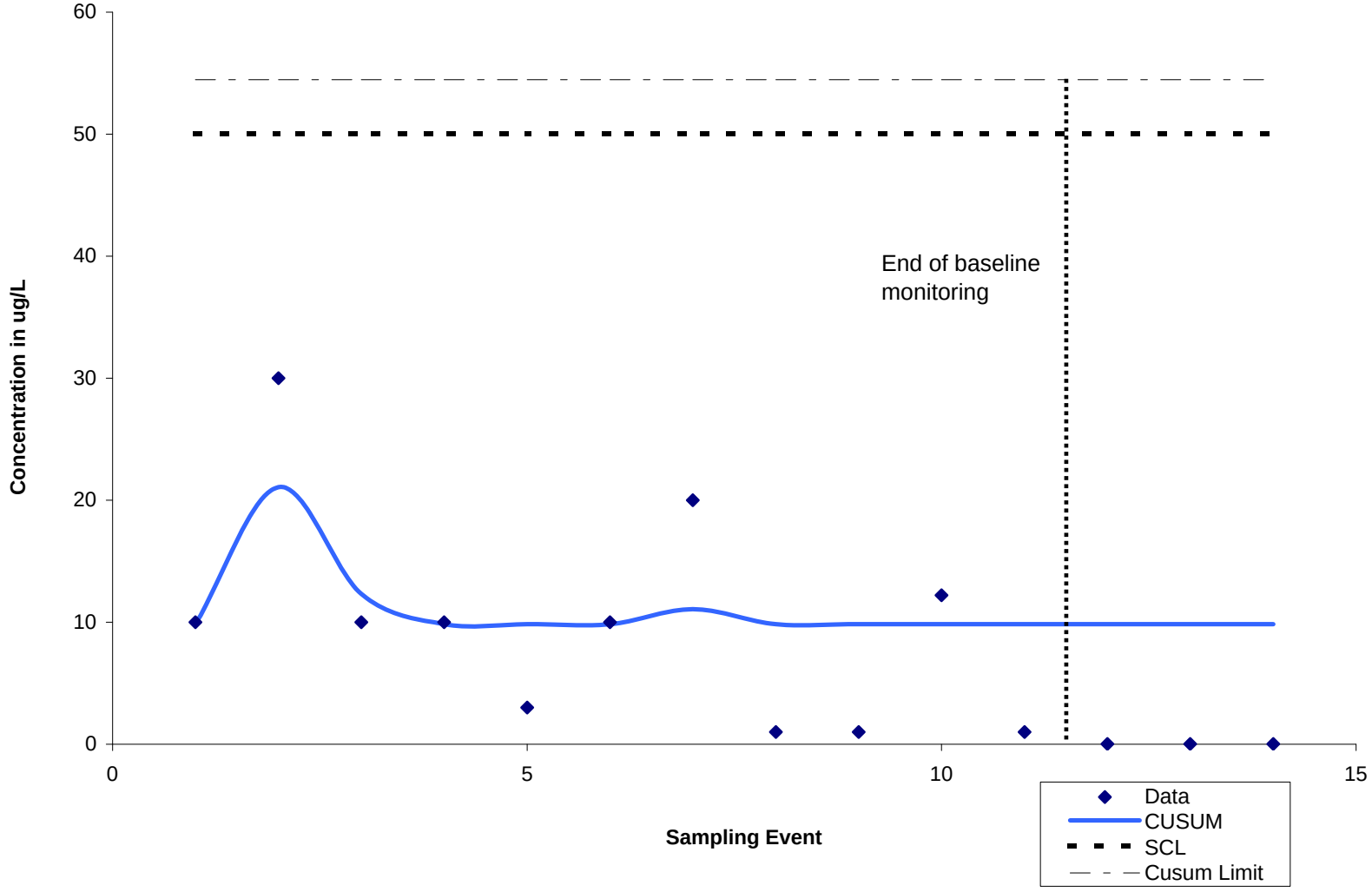
Figure **12**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-5 Lead Shewhart-CUSUM Control Chart

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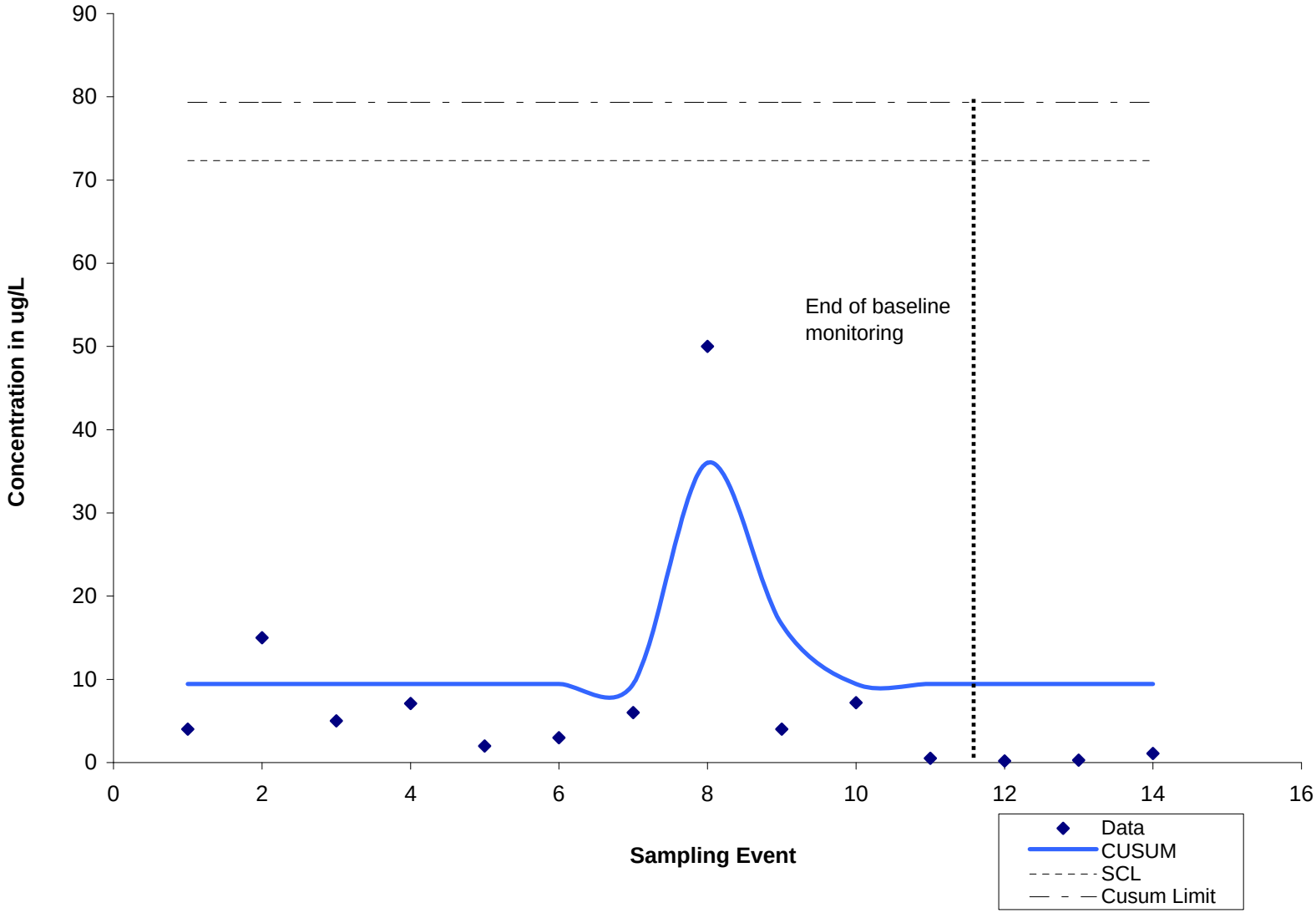
Figure **13**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-5 Nickel Shewhart-CUSUM Control Chart

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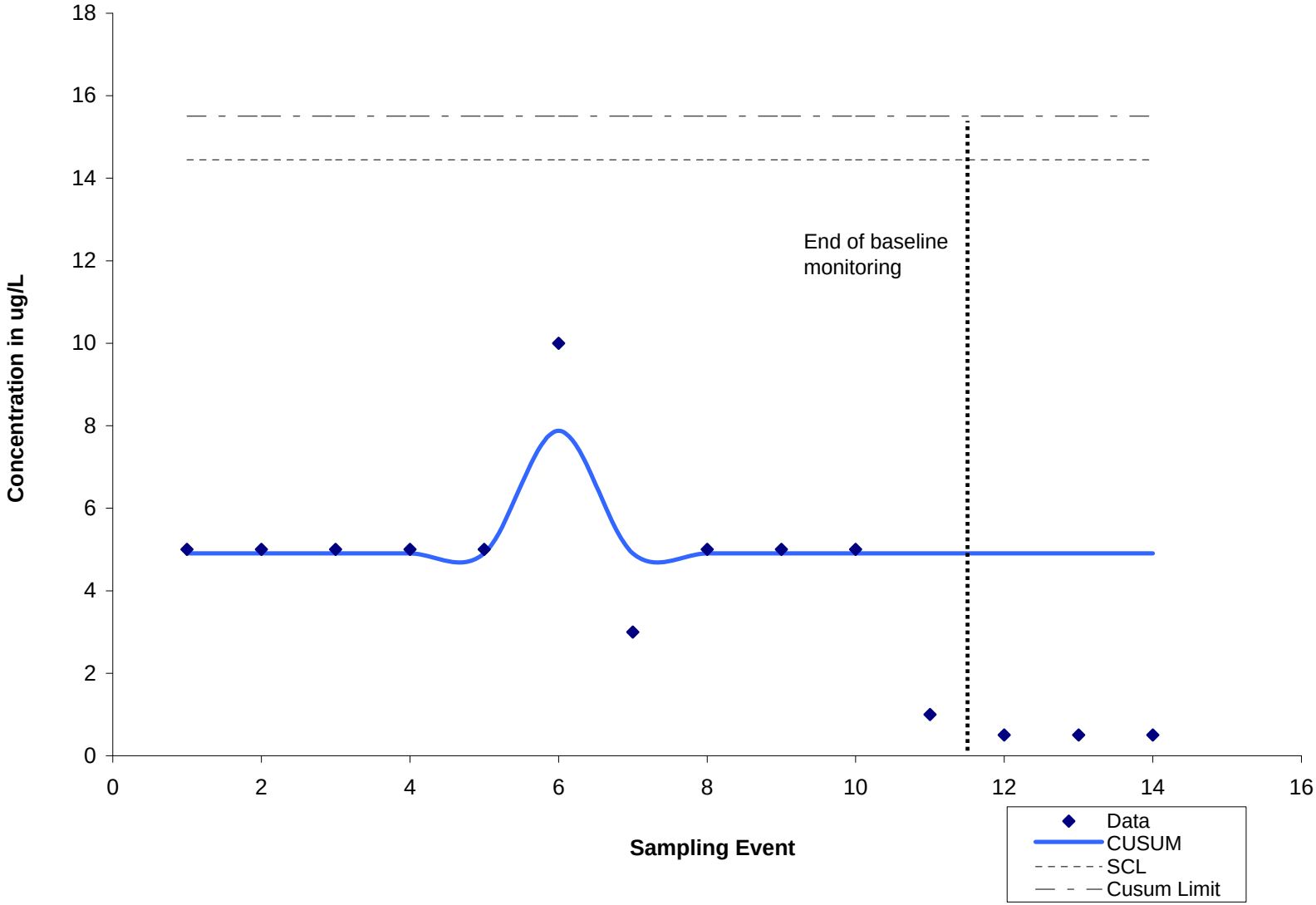
Figure **14**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-7 Arsenic Shewhart-CUSUM Control Chart

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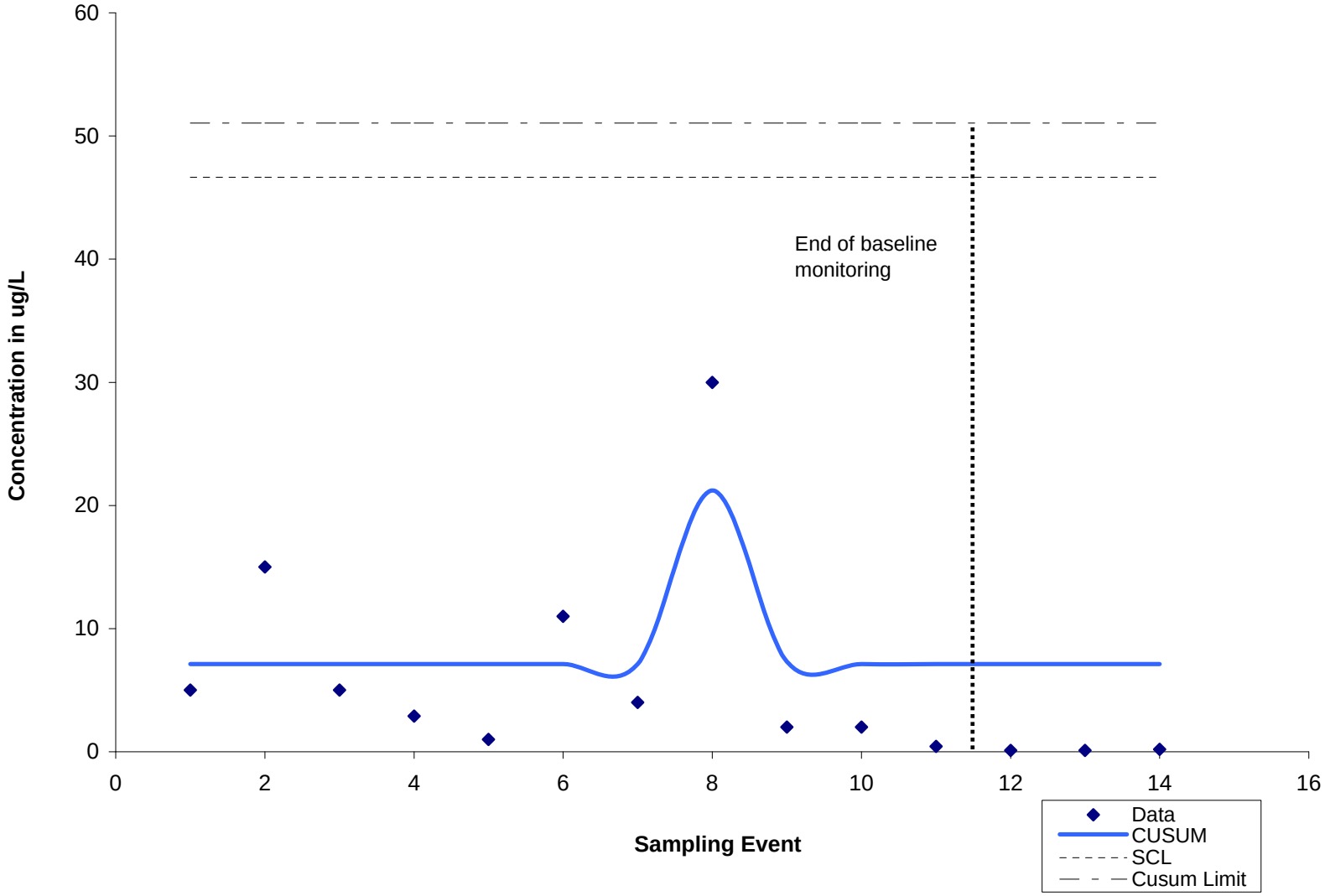
Figure

15



Sitcum Waterway - Remediation
Tacoma, Washington

MW-7 Copper Shewhart-CUSUM Control Chart

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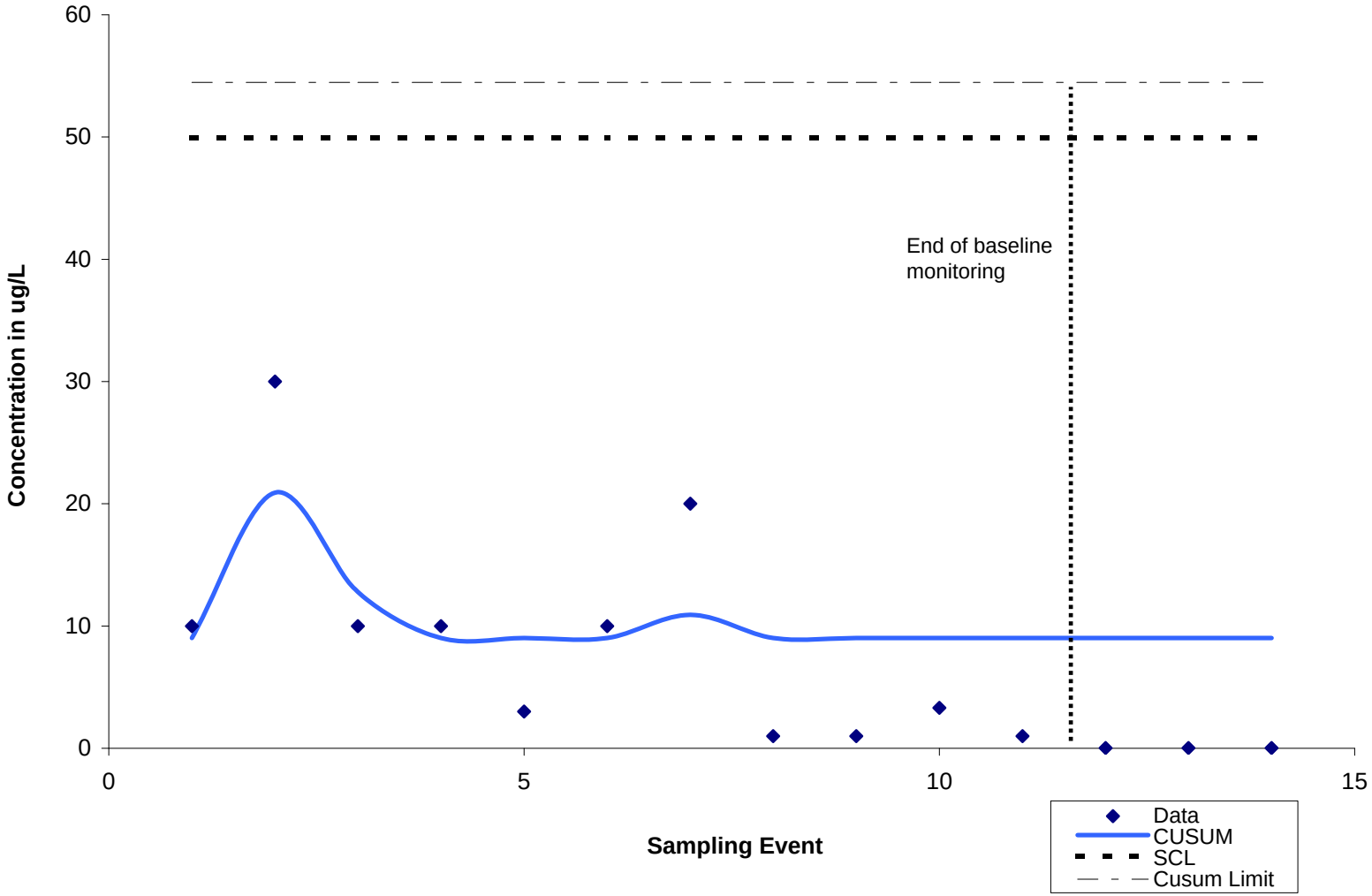
Figure **16**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-7 Lead Shewhart-CUSUM Control Chart

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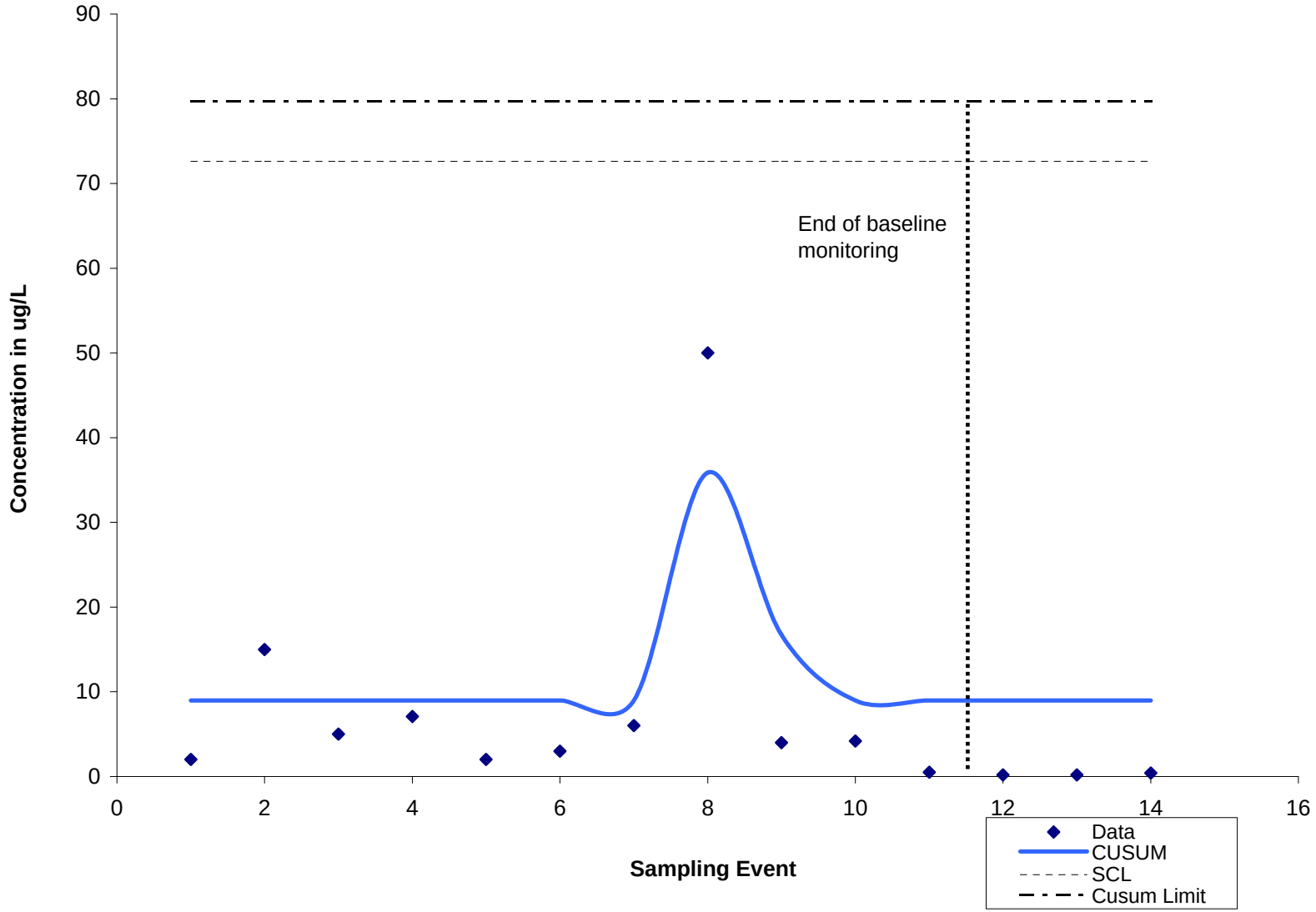
Figure **17**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-7 Nickel Shewhart-CUSUM Control Chart

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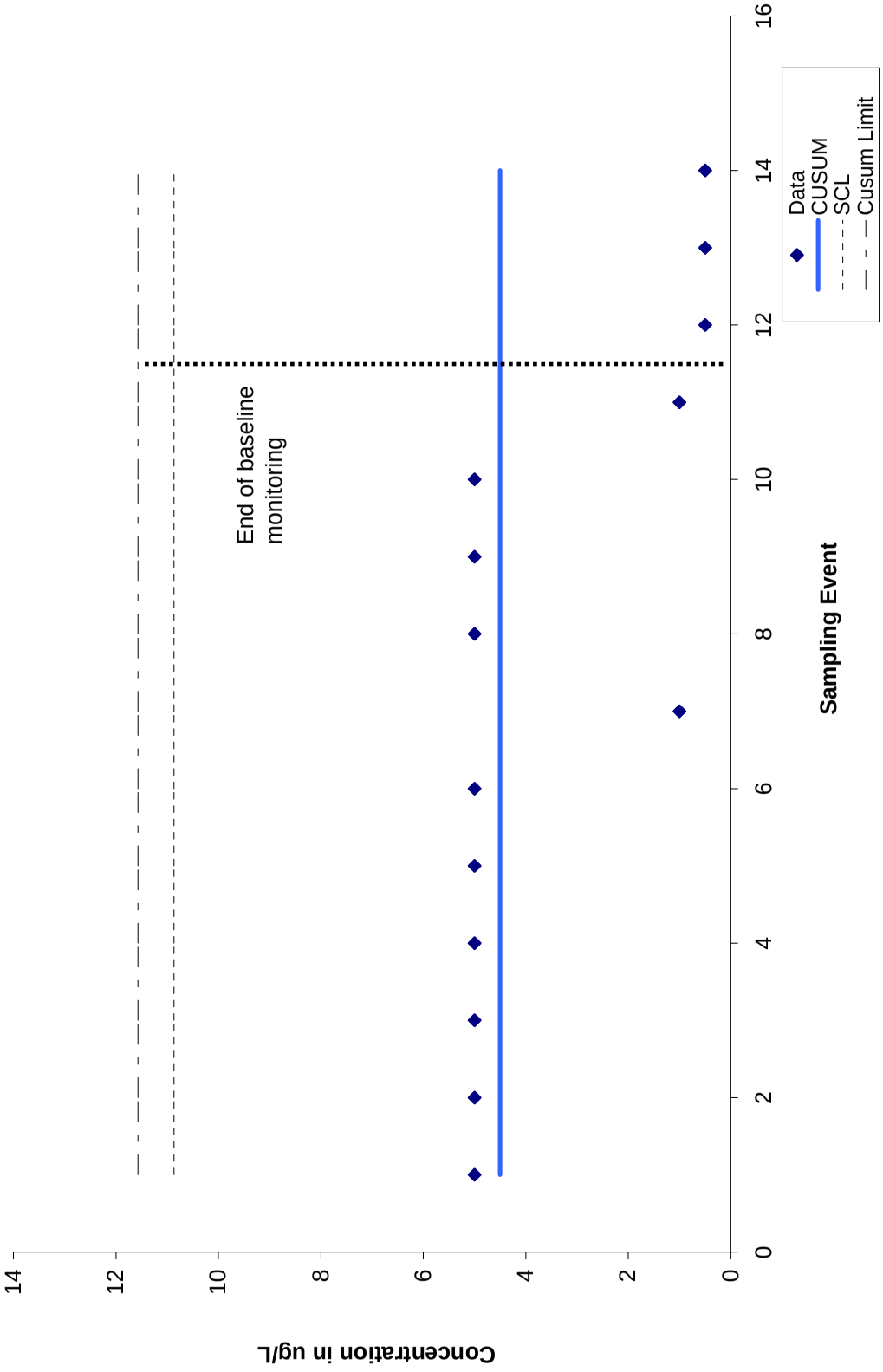
Figure **18**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-10 Arsenic Shewhart-CUSUM Control Chart

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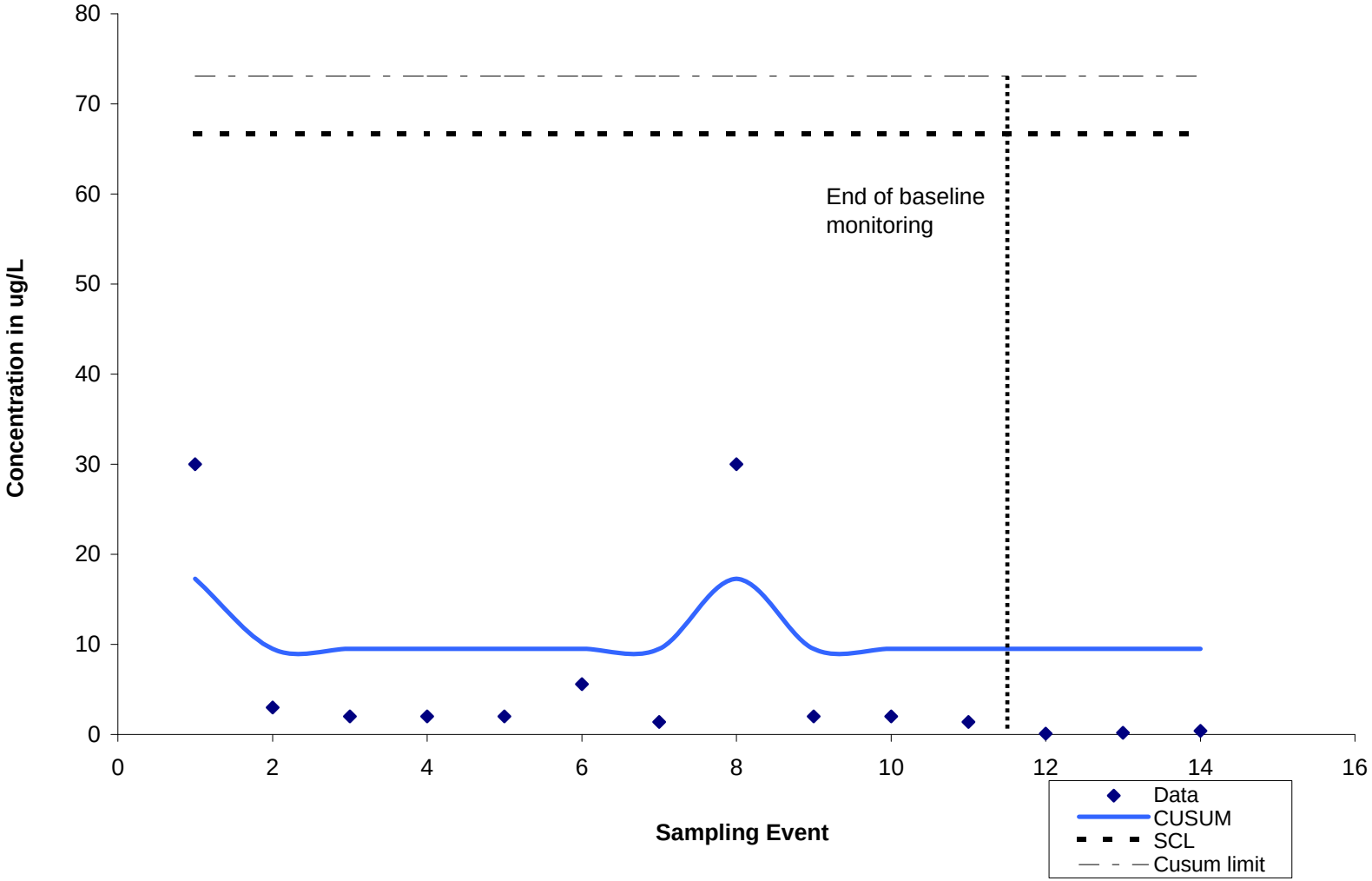
Figure

19

EAL 05/15/13 1747201-AQ.xls



Sitcum Waterway - Remediation
Tacoma, Washington

MW-10 Copper Shewhart-CUSUM Control Chart

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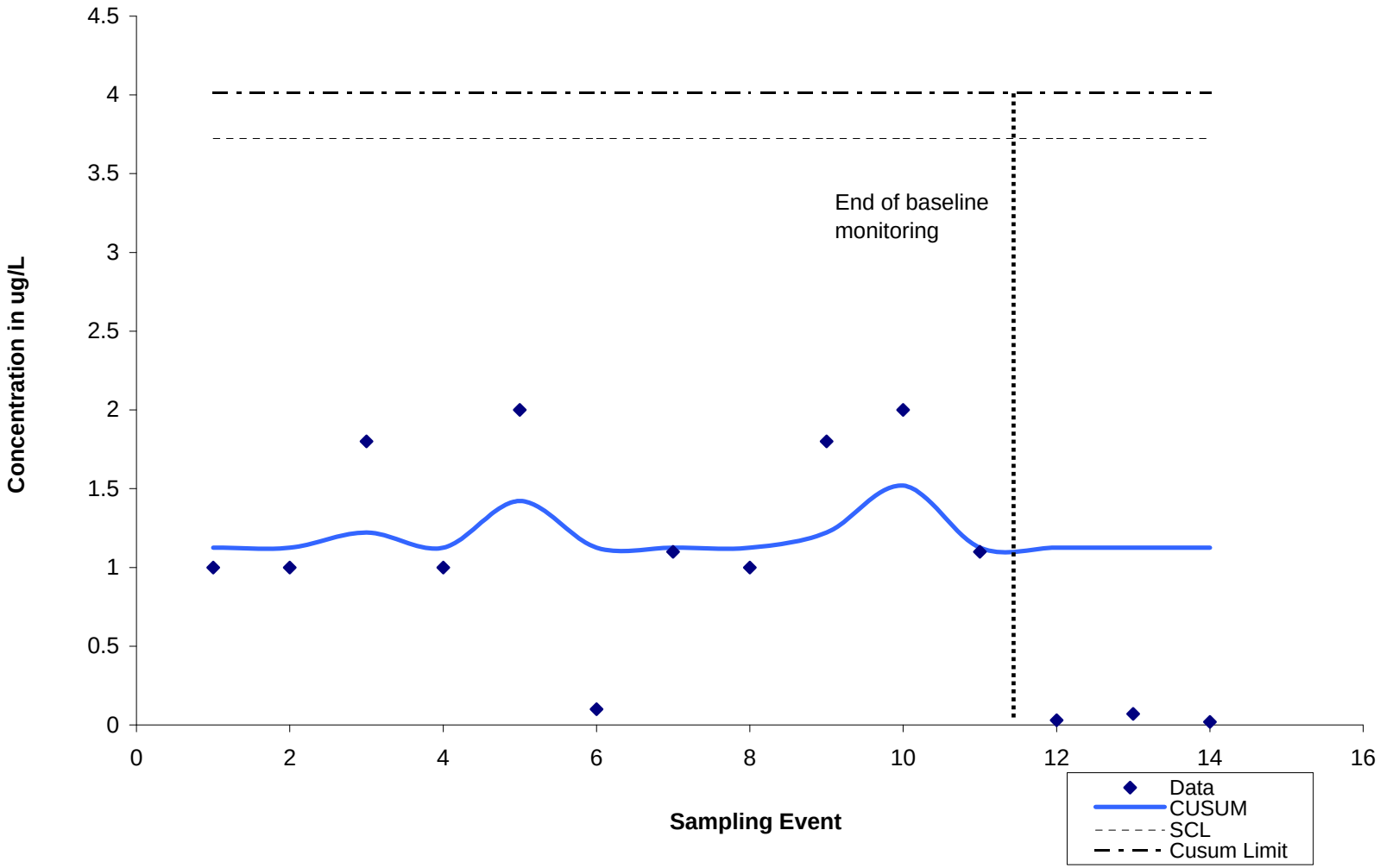
HARTCROWSER

Figure **20**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-10 Lead Shewhart-CUSUM Control Chart

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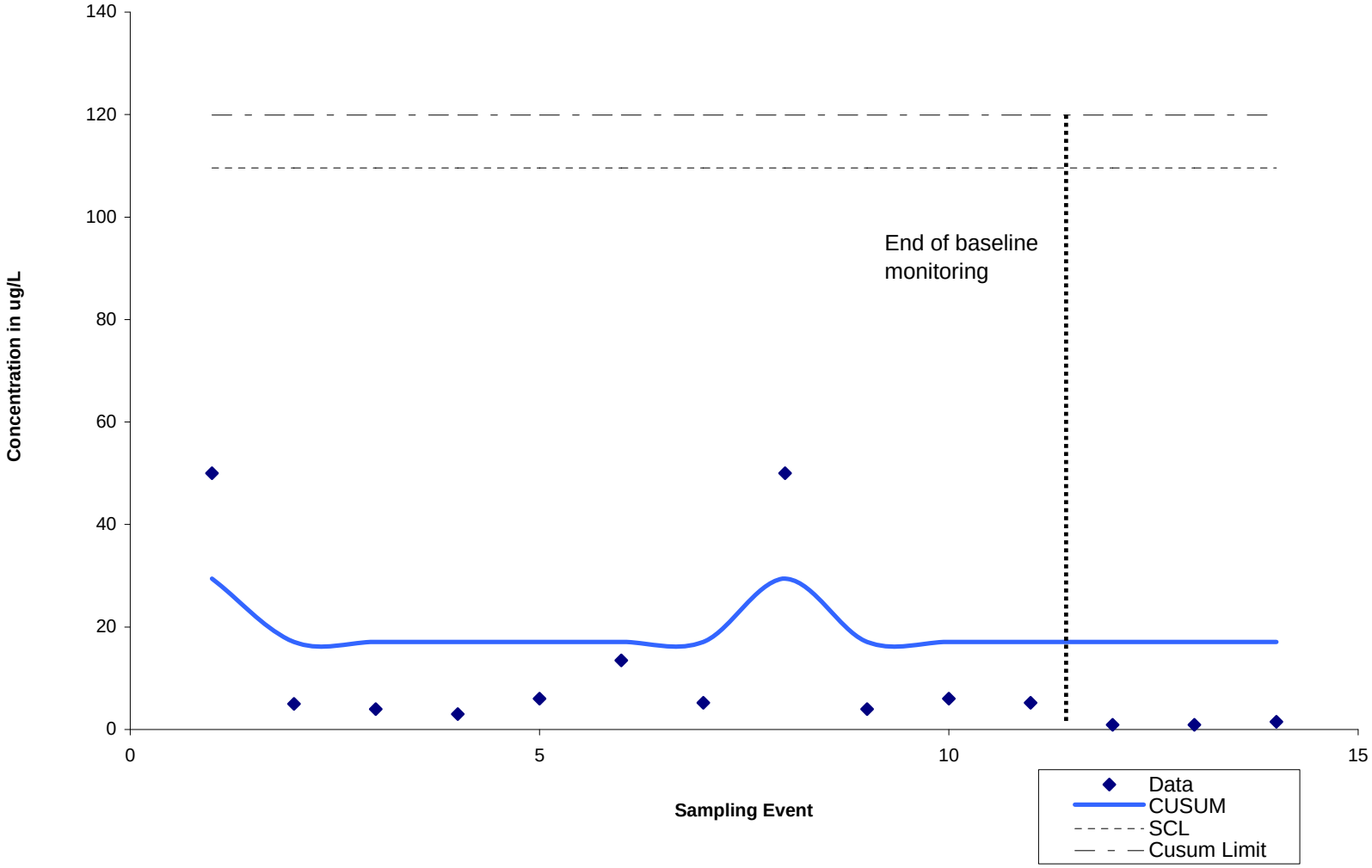
Figure **21**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-10 Nickel Shewhart-CUSUM Control Chart

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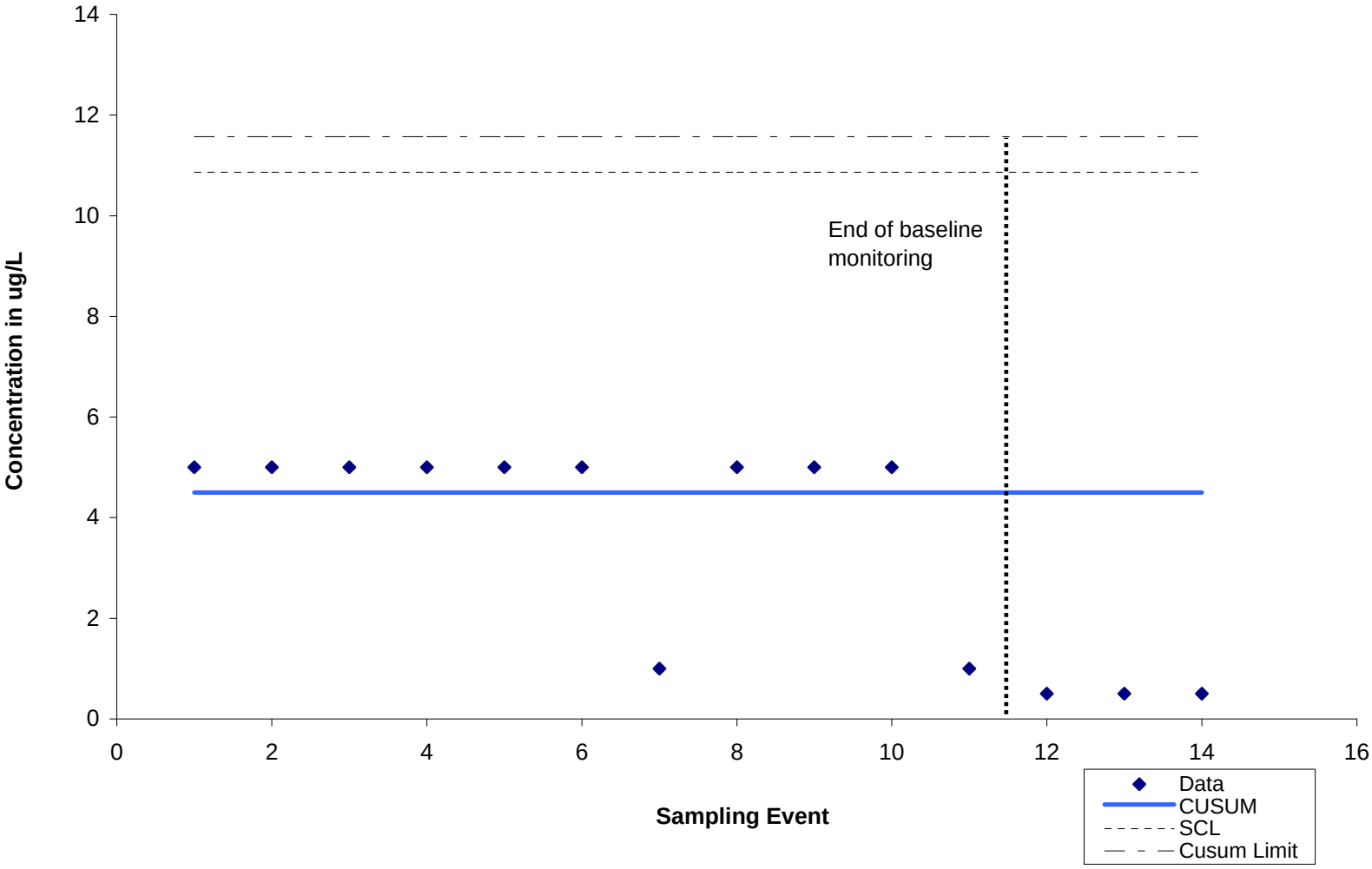
HARTCROWSER

Figure

22



Sitcum Waterway - Remediation
Tacoma, Washington

MW-12 Arsenic Shewhart-CUSUM Control Chart

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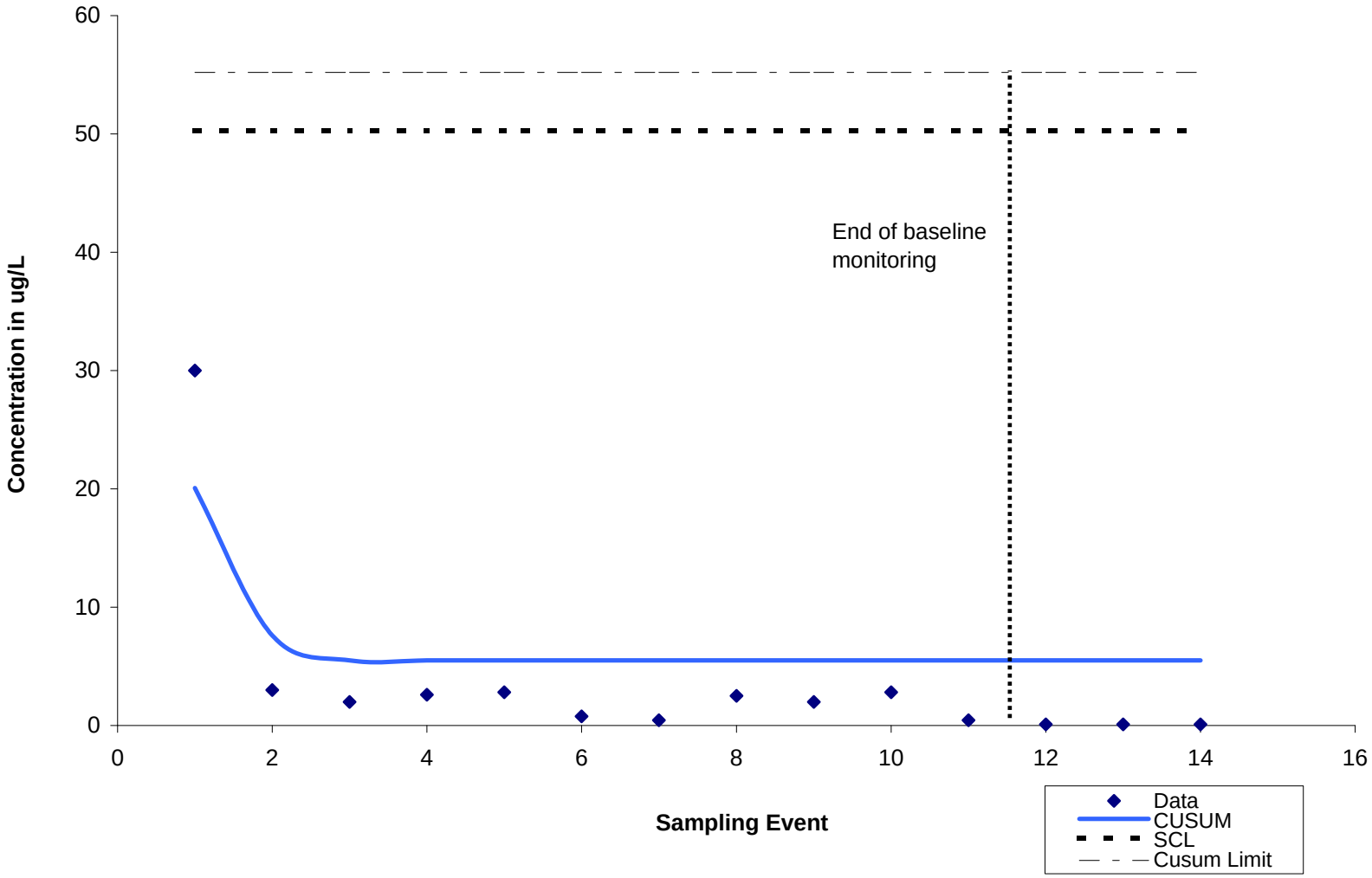
HARTCROWSER

Figure

23



Sitcum Waterway - Remediation
Tacoma, Washington

MW-12 Copper Shewhart-CUSUM Control Chart

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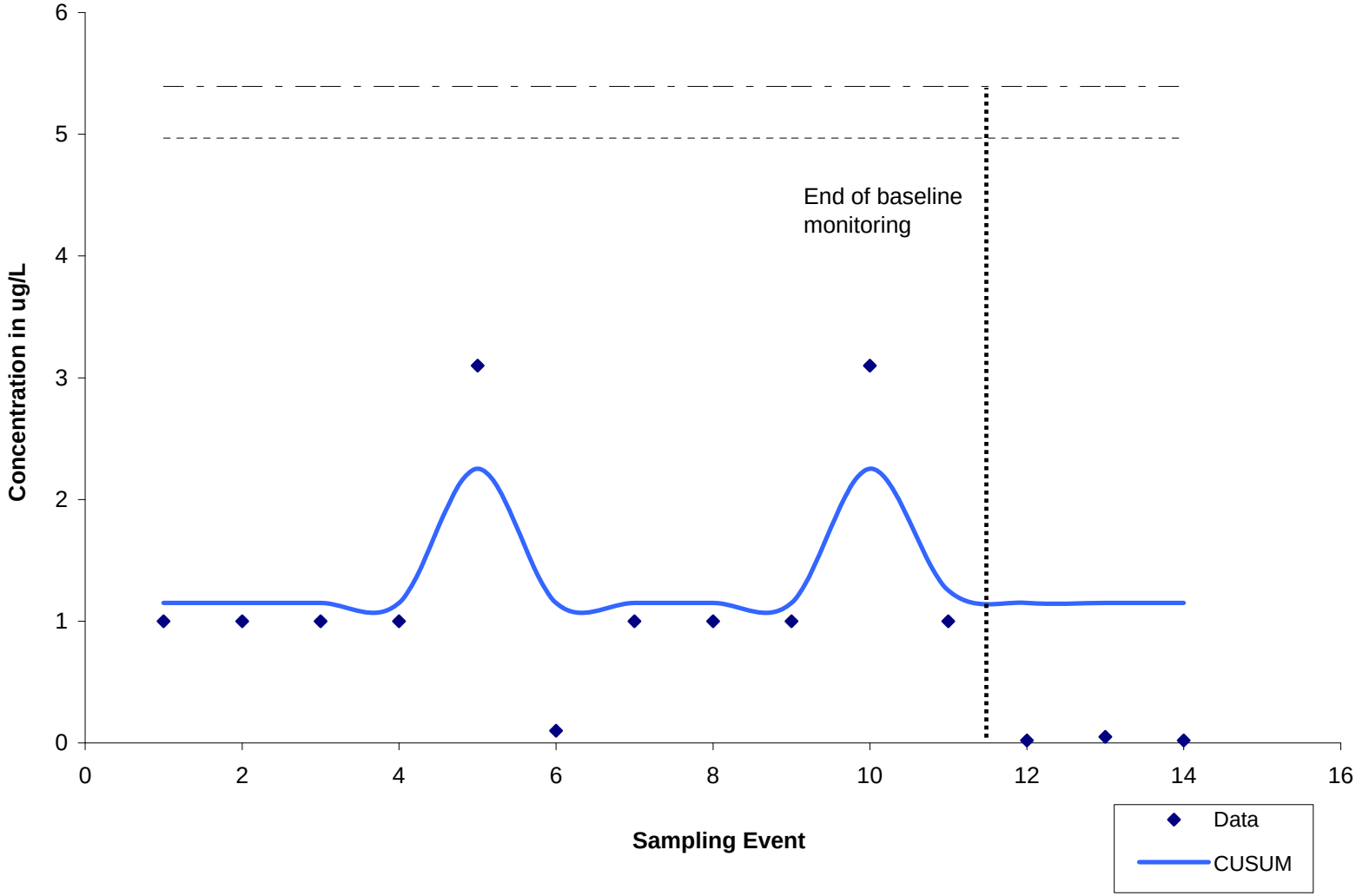
Figure **24**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-12 Lead Shewhart-CUSUM Control Chart

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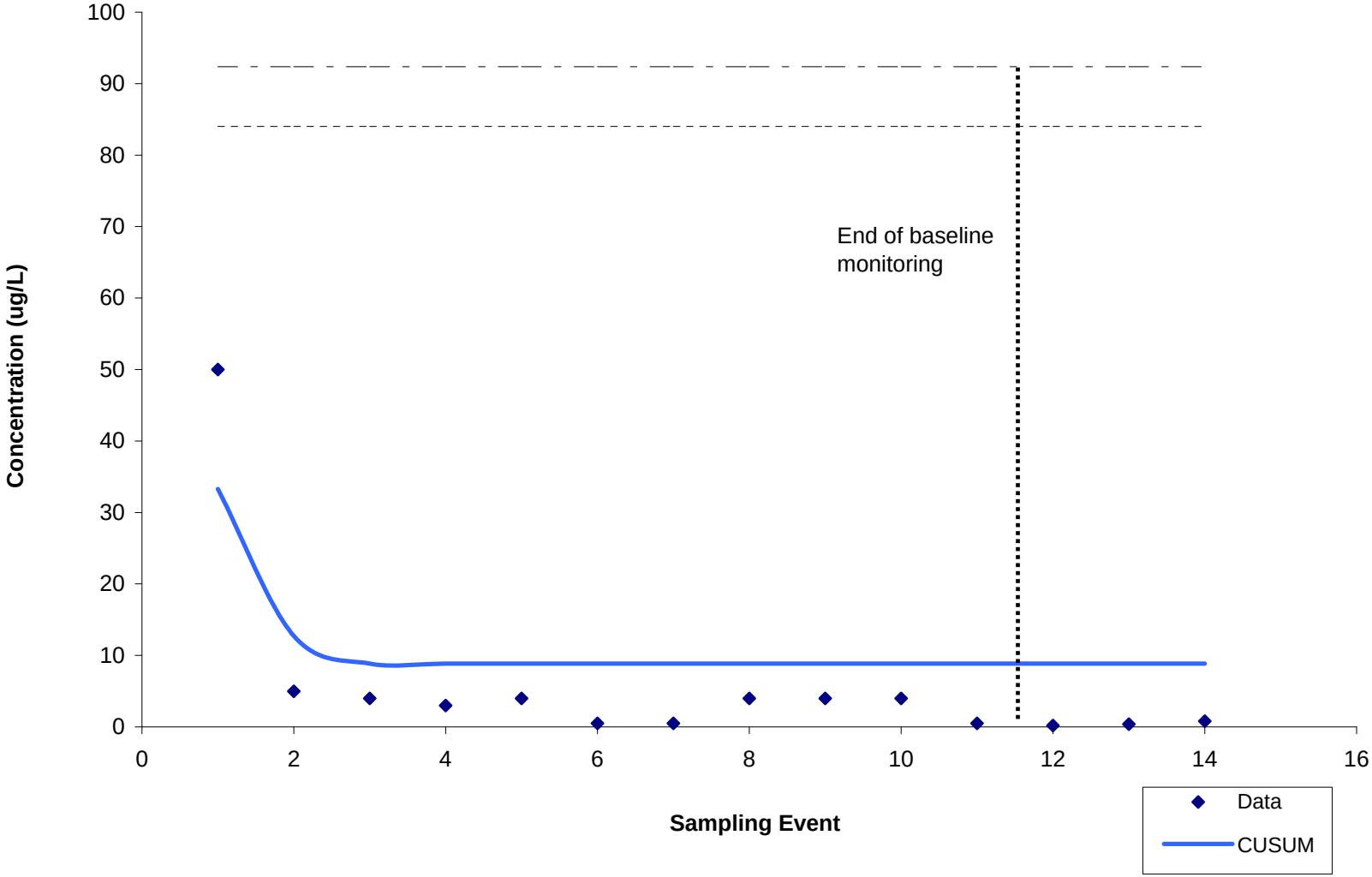
HARTCROWSER

Figure **25**



Sitcum Waterway - Remediation
Tacoma, Washington

MW-12 Nickel Shewhart-CUSUM Control Chart

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Figure **26**

APPENDIX A
GROUNDWATER ELEVATION AND SAMPLING DATA

Table A-1 - Baseline Groundwater Elevation Data (1995-1996)

Well ID	TOC Elevation	Well Coordinates		Feb-95		May-95		Aug-95		Nov-95		Feb-96		May-96		Aug-96		Nov-96	
		Norting	Easting	DTW	Elev.	DTW	Elev.	DTW	Elev.	DTW	Elev.	DTW	Elev.	DTW	Elev.	DTW	Elev.	DTW	Elev.
MW-1	17.38	708437	1165208	6.58	10.80	NA	NA	7.75	9.63	NA	NA	5.39	11.99	NA	NA	8.15	9.23	NA	NA
MW-1A	17.68	708439	1165175	6.81	10.87	NA	NA	8.05	9.63	NA	NA	5.85	11.83	NA	NA	8.42	9.26	NA	NA
MW-4	18.01	710176	1164812	8.68	9.33	NA	NA	9.27	8.74	NA	NA	5.15	12.86	NA	NA	12.10	5.91	NA	NA
MW-5	17.19	709724	1163887	8.60	8.59	NA	NA	8.53	8.66	NA	NA	8.19	9.00	NA	NA	12.01	5.18	NA	NA
MW-7	17.08	710873	1163197	8.18	8.90	NA	NA	8.80	8.28	NA	NA	7.33	9.75	NA	NA	10.40	6.68	NA	NA
MW-8	16.92	710311	1163515	6.88	10.04	6.66	9.72	9.68	7.24	7.20	9.72	NM	NM	7.00	9.92	8.72	8.20	7.20	9.72
MW-9	18.08	710995	1163102	8.66	9.42	8.64	8.95	9.26	8.82	9.13	8.95	8.03	10.05	9.40	8.68	10.31	7.77	9.20	8.88
MW-10	18.21	711320	1163495	8.38	9.83	8.28	10.75	8.78	9.43	7.46	10.75	5.98	12.23	8.50	9.71	9.36	8.85	8.30	9.91
MW-11	17.48	711581	1163724	9.01	8.47	7.07	9.75	7.86	9.62	7.73	9.75	7.77	9.71	12.70	4.78	11.61	5.87	8.70	8.78
MW-12	17.15	711055	1164178	8.55	8.60	10.58	11.39	7.25	9.90	5.76	11.39	6.33	10.82	8.80	8.35	9.94	7.21	8.70	8.45
MW-14	17.95	710196	1164036	8.58	9.37	12.57	11.18	9.07	8.88	6.77	11.18	5.82	12.13	11.40	6.55	12.82	5.13	8.10	9.85

TOC: Top of well casing.
DTW: Depth to water below TOC in feet.
Elev: Groundwater elevation in feet (MLLW).
NA: No measurement, well not sampled
NM: Unreliable measurement. Refer to Port, 1996b.
Horizontal Datum is on Washington State Plane Coordinates (South Zone in Feet), NAD8

1513

HARTCROWSER Groundwater Sampling Data - Well I.D. MW-1

PROJECT: Sitcum Waterway
JOB NO.: 17472-01
PROJECT MANAGER: McGinnis
FIELD REPS: KJH

DATE/TIME SAMPLED: 3/19/13
TIDALLY INFLUENCED: YES ____ NO ____
WELL DEPTH IN FEET: ____
SCREENED INTERVAL IN FEET: ____

1 Purging Data/Field Measurements: *All Measurements Relative to Top of Casing (TOC)*

WELL DEPTH: ____
DEPTH TO SEDIMENT (DTS) IN FEET: ____
DEPTH TO WATER (DTW) IN FEET: 7.30
(DTS – DTW): ____

CASING VOLUME IN GALLONS: ____
[2" diam = x .163 gal/ft 4" diam = x .653 gal/ft]
PURGE VOLUME IN GALLONS: ____
ACTUAL PURGE IN GALLONS: ~5

Time	No. of Gallons Purged	pH	Temp in °C	Conduct in mS/cm	Diss. Oxygen in mg/L	Turbidity	Comments: quality, recovery, color, odor, sheen, accumulated silt/sand ORP
1454	~2	7.93	14.3	0.654	4.68	11.8	6 clear, no odor/sheen
1500	~3	7.92	14.3	0.656	3.98	10.4	4 " , some small rusty colored particles
1506	~4	7.89	14.4	0.651	3.40	11.0	2 " "
1513	~5	7.88	14.5	0.649	3.39	9.8	1 " "
Sample sample:							

Comments: unable to get depth to sediment due to bladder pump

	Method	Pumping Rate in GPM	Depth of Equip. in Feet
Purge	peristaltic pump	<1 L/min	~45'
Sample	"	"	"

Boils dry? Yes ____ No X
At no. of casing volumes ____
Purge Water Disposal Method/Volume ____

2 Sampling Data

Bottle Type	# of Containers	Analyses	Preserv.	Filter
.5L	1	Salinity	—	N
.5L	1	TOC	H_2SO_4	N
1L	1	Diss. metals	HNO_3	Y

Total number of Bottles ____
Duplicate Sample I.D. 3
Field Blank I.D. ____
Rinseate Sample I.D. ____

3 Field Equipment

Type/Brand/Serial No./Material Units

Pump Type/Tubing Type: peristaltic / PE
Bailer Type: ____
Filter Type: ____

Temp/pH/E.C. meter: ____
Water Level Probe: Heron
Other: ____

4 Well Conditions

OK [X] Not OK [ ] Explain ____

1436

HARTCROWSER Groundwater Sampling Data - Well I.D. MW-1a

PROJECT: Sitcum Waterway
JOB NO.: 17472-01
PROJECT MANAGER: McGinnis
FIELD REPS: KJH

DATE/TIME SAMPLED: 3/19/13
TIDALLY INFLUENCED: YES ____ NO ____
WELL DEPTH IN FEET: ____
SCREENED INTERVAL IN FEET: ____

1 Purging Data/Field Measurements: *All Measurements Relative to Top of Casing (TOC)*

WELL DEPTH: ____
DEPTH TO SEDIMENT (DTS) IN FEET: ____
DEPTH TO WATER (DTW) IN FEET: 7.74
(DTS – DTW): ____

CASING VOLUME IN GALLONS: ____
[2" diam = x .163 gal/ft 4" diam = x .653 gal/ft]
PURGE VOLUME IN GALLONS: ____
ACTUAL PURGE IN GALLONS: ~5

	Time	No. of Gallons Purged	pH	Temp in °C	Conduct in mS/cm	Diss. Oxygen in mg/L	Turbidity	Comments: quality, recovery, color, odor, sheen, accumulated silt/sand ORP
	1407	~.5	9.96	14.0	0.456	10.46	2.4	-24 clear, no odor/sheen
	1415	~2	8.99	14.3	0.344	6.22	2.1	-11 " slight yellow tint
	1421	~3	8.64	14.2	0.329	4.61	2.2	-8 slight sulfur smell
	1429	~4	8.34	14.2	0.334	3.50	1.9	-14 "
sample:	1436	~5	8.32	14.2	0.336	3.47	1.9	-16

Comments: unable to get depth to sediment due to bladder pump

	Method	Pumping Rate in GPM	Depth of Equip. in Feet
Purge	peristaltic pump	2 L/min	~25'
Sample	"	"	"

Boils dry? Yes ____ No X
At no. of casing volumes ____
Purge Water Disposal Method/Volume ____

2 Sampling Data

Bottle Type	# of Containers	Analyses	Preserv.	Filter
.5L	1	TOC	H_2SO_4	Y
.5L	1	salinity	—	Y
1L	1	Diss. metals	HNO_3	N

Total number of Bottles: 3
Duplicate Sample I.D.: ____
Field Blank I.D.: ____
Rinseate Sample I.D.: ____

3 Field Equipment — Type/Brand/Serial No./Material Units

Pump Type/Tubing Type: peristaltic / PE
Bailer Type: ____
Filter Type: ____

Temp/pH/E.C. meter: ____
Water Level Probe: Heron
Other: ____

4 Well Conditions

OK [X] Not OK [ ] Explain ____

1320

HARTCROWSER Groundwater Sampling Data - Well I.D. MW-12

PROJECT: Sitcum Waterway
JOB NO.: 17472-01
PROJECT MANAGER: McGinnis
FIELD REPS: KJH

DATE/TIME SAMPLED: 3/19/13
TIDALLY INFLUENCED: YES ____ NO ____
WELL DEPTH IN FEET: ____
SCREENED INTERVAL IN FEET: ____

1 Purging Data/Field Measurements: *All Measurements Relative to Top of Casing (TOC)*

WELL DEPTH: ____
DEPTH TO SEDIMENT (DTS) IN FEET: ____
DEPTH TO WATER (DTW) IN FEET: 7.21
(DTS – DTW): ____

CASING VOLUME IN GALLONS: ____
[2" diam = x .163 gal/ft 4" diam = x .653 gal/ft]
PURGE VOLUME IN GALLONS: ____
ACTUAL PURGE IN GALLONS: ____

	Time	No. of Gallons Purged	pH	Temp in °C	Conduct in mS/cm	Diss. Oxygen in mg/L	Turbidity	Comments: ORP	quality, recovery, color, odor, sheen, accumulated silt/sand
	1255	~1.5	8.07	13.3	31.2	15.21	1.7	26	no odor/sheen, clear
	1302	~1.5	7.98	13.7	31.3	13.45	20	26	" , slight yellow tint
	1309	~2.5	7.94	13.7	31.4	12.91	1.6	29	" "
	1315	~3.5	7.87	13.7	31.3	12.21	1.3	32	" "
sample:	1320	~4.5	7.86	13.7	31.2	12.20	1.6	34	" "

Comments: unable to get depth to sediment due to pump

	Method	Pumping Rate in GPM	Depth of Equip. in Feet
Purge	peristaltic pump	< 1 L/min	~ 25'
Sample	"	"	"

Boils dry? Yes ____ No X
At no. of casing volumes ____
Purge Water Disposal Method/Volume ____

2 Sampling Data

Bottle Type	# of Containers	Analyses	Preserv.	Filter
.5L	1	TOC	H_2SO_4	N
.5L	1	Salinity	–	N
1L	1	Diss Metals	HNO_3	Y

Total number of Bottles: 3
Duplicate Sample I.D.: ____
Field Blank I.D.: ____
Rinseate Sample I.D.: ____

3 Field Equipment

Pump Type/Tubing Type: Peristaltic / PE
Bailer Type: ____
Filter Type: ____

Type/Brand/Serial No./Material Units

Temp/pH/E.C. meter: ____
Water Level Probe: Heron
Other: ____

4 Well Conditions

OK [X] Not OK [ ] Explain ____

1216

HARTCROWSER Groundwater Sampling Data - Well I.D. MW-14

PROJECT: S. Tacoma Waterway
JOB NO.: 17472-01
PROJECT MANAGER: McGinnis
FIELD REPS: KJH

DATE/TIME SAMPLED: 3/19/13
TIDALLY INFLUENCED: YES ____ NO ____
WELL DEPTH IN FEET: ____
SCREENED INTERVAL IN FEET: ____

1 Purging Data/Field Measurements: *All Measurements Relative to Top of Casing (TOC)*

WELL DEPTH: ____
DEPTH TO SEDIMENT (DTS) IN FEET: —
DEPTH TO WATER (DTW) IN FEET: 7.15
(DTS – DTW): ____

CASING VOLUME IN GALLONS: ____
[2" diam = x .163 gal/ft 4" diam = x .653 gal/ft]
PURGE VOLUME IN GALLONS: ____
ACTUAL PURGE IN GALLONS: ~5

Time	No. of Gallons Purged	pH	Temp in °C	Conduct in mS/cm	Diss. Oxygen in mg/L	Turbidity	Comments: quality, recovery, color, odor, sheen, ORP accumulated silt/sand
1151	~.5	9.08	12.3	2.45	15.69	2.2	-8 clear, no odor/sheen
1158	~2.0	8.32	12.6	2.33	13.31	2.0	14 " , slight yellow tint
1205	~3.0	7.08	12.7	31.7	11.32	1.8	37 " "
1210	~4	7.48	12.7	34.1	9.11	1.3	35 " "
sample: 1216	~5	7.49	12.7	34.4	9.09	1.2	34 " "

Comments: unable to get depth to sediment due to bladder pump

	Method	Pumping Rate in GPM	Depth of Equip. in Feet
Purge	peristaltic pump	<1L/min	~20
Sample	"	"	"

Boils dry? Yes ____ No X
At no. of casing volumes ____
Purge Water Disposal Method/Volume ____

2 Sampling Data

Bottle Type	# of Containers	Analyses	Preserv.	Filter
.5L	2	TOC	H_2SO_4	N
.5L	2	Salinity	—	N
1L	2	Diss Metals	HNO_3	Y

Total number of Bottles: 6
Duplicate Sample I.D.: MW-1400 (1236)
Field Blank I.D.: ____
Rinseate Sample I.D.: ____

3 Field Equipment

Type/Brand/Serial No./Material Units

Pump Type/Tubing Type: peristaltic / PE
Bailer Type: ____
Filter Type: ____
Temp/pH/E.C. meter: ____
Water Level Probe: Heron
Other: ____

4 Well Conditions

OK [X] Not OK [ ] Explain ____

1102

HARTCROWSER Groundwater Sampling Data - Well I.D. MW-5

PROJECT: Sitcum
JOB NO.: 17472-01
PROJECT MANAGER: McGinnis
FIELD REPS: KJH

DATE/TIME SAMPLED: 3/19/13
TIDALLY INFLUENCED: YES ____ NO ____
WELL DEPTH IN FEET: ____
SCREENED INTERVAL IN FEET: ____

1 Purging Data/Field Measurements: *All Measurements Relative to Top of Casing (TOC)*

WELL DEPTH: ____
DEPTH TO SEDIMENT (DTS) IN FEET: —
DEPTH TO WATER (DTW) IN FEET: 7.02
(DTS – DTW): ____

CASING VOLUME IN GALLONS: ____
[2" diam = x .163 gal/ft 4" diam = x .653 gal/ft]
PURGE VOLUME IN GALLONS: ____
ACTUAL PURGE IN GALLONS: ~4.25

	Time	No. of Gallons Purged	pH	Temp in °C	Conduct in ____	Diss. Oxygen in ____	Turbidity	Comments: quality, recovery, color, odor, sheen, accumulated silt/sand ORP
	1038	~.1	8.54	12.8	7.24	18.50	5.0	-4 Clear, no odor / sheen
	1046	~1.5	7.84	13.3	16.2	8.09	1.5	-16 slight sulfur smell, slight red tint
	1052	~3	7.97	13.2	17.4	3.31	1.5	-54 "
	1057	~4	8.02	13.2	17.6	0.31	2.2	-81 strong sulfur smell, slight red tint
sample:	1102	~4.25	8.03	13.2	17.7	0.30	2.1	-87 " "

Comments: unable to get depth to sediment due to bladder pump

	Method	Pumping Rate in GPM	Depth of Equip. in Feet
Purge	Peristaltic pump	<1 L/min	~20'
Sample	"	"	"

Boils dry? Yes ____ No X
At no. of casing volumes ____
Purge Water Disposal Method/Volume ____

2 Sampling Data

Bottle Type	# of Containers	Analyses	Preserv.	Filter
.5L	3	Salinity	—	N
.5L	3	TOC	H_2SO_4	N
1L	3	Diss Metals	HNO_3	Y

Total number of Bottles: 9
Duplicate Sample I.D. ____
Field Blank I.D. ____
Rinseate Sample I.D. ____

3 Field Equipment

Type/Brand/Serial No./Material Units

Pump Type/Tubing Type: Peristaltic / PE
Bailer Type: ____
Filter Type: ____

Temp/pH/E.C. meter: ____
Water Level Probe: Heron
Other: ____

4 Well Conditions

OK [X] Not OK [ ] Explain ____

1012

HARTCROWSER Groundwater Sampling Data - Well I.D. MW-7

PROJECT: Sitcum
JOB NO.: 17472-01
PROJECT MANAGER: McGinnis
FIELD REPS: KJH

DATE/TIME SAMPLED: 3/19/13
TIDALLY INFLUENCED: YES ____ NO ____
WELL DEPTH IN FEET: ____
SCREENED INTERVAL IN FEET: ____

1 Purging Data/Field Measurements: *All Measurements Relative to Top of Casing (TOC)*

WELL DEPTH: ____
DEPTH TO SEDIMENT (DTS) IN FEET: unable to determine
DEPTH TO WATER (DTW) IN FEET: 6.08
(DTS – DTW): ____

CASING VOLUME IN GALLONS: ____ [2" diam = x .163 gal/ft 4" diam = x .653 gal/ft]
PURGE VOLUME IN GALLONS: ____
ACTUAL PURGE IN GALLONS: ~4.5

	Time	No. of Gallons Purged	pH	Temp in °C	Conduct in mS/cm	Diss. Oxygen in mg/L	Turbidity	Comments: quality, recovery, color, odor, sheen, accumulated silt/sand ORP
	0950	~.5	7.60	13.8	22.2	16.47	17.7	95 no odor/sheen, lots of particulate matter
	0956	~1.5	7.72	13.7	27.1	8.88	40.3	73 ", slight yellow/green tint
	1001	~2.5	7.78	13.6	27.0	7.76	27.5	50 " "
	1007	~3.5	7.80	13.6	27.0	7.00	21.1	37 " "
sample:	1012	~4.5	7.81	13.5	27.1	6.99	21.0	23 " "

Comments: couldn't get depth to sediment due to bladder pump

	Method	Pumping Rate in GPM	Depth of Equip. in Feet
Purge	peristaltic pump	<1L/min	~25'
Sample	"	"	"

Boils dry? Yes ____ No X
At no. of casing volumes ____
Purge Water Disposal Method/Volume ____

2 Sampling Data

Bottle Type	# of Containers	Analyses	Preserv.	Filter
.5L	1	Salinity	–	N
.5L	1	~~Salinity~~ TOC	H_2SO_4	N
1L	1	Diss. Metals	HNO_3	Y

Total number of Bottles: 3
Duplicate Sample I.D.: ____
Field Blank I.D.: ____
Rinseate Sample I.D.: ____

3 Field Equipment

Type/Brand/Serial No./Material Units

Pump Type/Tubing Type: peristaltic / PE
Bailer Type: ____
Filter Type: ____

Temp/pH/E.C. meter: ____
Water Level Probe: Heron
Other: ____

4 Well Conditions

OK [X] Not OK [ ] Explain ____

(915)

HARTCROWSER Groundwater Sampling Data - Well I.D. MW-10

PROJECT: Sitcum Waterway
JOB NO.: 17472-01
PROJECT MANAGER: McGinnis
FIELD REPS: KJH

DATE/TIME SAMPLED: 3/19/13
TIDALLY INFLUENCED: YES ____ NO ____
WELL DEPTH IN FEET: ____
SCREENED INTERVAL IN FEET: ____

1 Purging Data/Field Measurements: *All Measurements Relative to Top of Casing (TOC)*

WELL DEPTH: ____
DEPTH TO SEDIMENT (DTS) IN FEET: 35.97
DEPTH TO WATER (DTW) IN FEET: 8.31
(DTS – DTW): 27.66

CASING VOLUME IN GALLONS: 4.51
[2" diam = x .163 gal/ft 4" diam = x .653 gal/ft]
PURGE VOLUME IN GALLONS: 13.52
ACTUAL PURGE IN GALLONS: ~3.5

Time	No. of Gallons Purged	pH	Temp in °C	Conduct in mS/cm	Diss. Oxygen in mg/L	Turbidity	Comments: quality, recovery, color, odor, sheen, accumulated silt/sand ORP
0853	~0.1	4.84	12.7	33.5	—	6.5	180 clear, no odor/sheen
0858	~.75	6.15	12.3	30.9	15.19	8.5	147 "
0903	~1.5	6.85	12.4	29.9	9.41	4.1	126 "
0910	~2.5	7.52	12.4	29.8	6.65	1.7	108 "
sample: 0915	~3.5	7.53	12.4	29.7	6.60	1.3	99 "

Comments: ____

	Method	Pumping Rate in GPM	Depth of Equip. in Feet
Purge	peristaltic	<1 L/min	~30'
Sample	"	"	"

Boils dry? Yes ____ No X
At no. of casing volumes ____
Purge Water Disposal Method/Volume ____

2 Sampling Data

Bottle Type	# of Containers	Analyses	Preserv.	Filter
.5L	1	~~Salinity~~ TOC	H_2SO_4	N
1L	1	Dissolved Metals	HNO_3	Y
.5L	1	~~TOC~~ Salinity	—	N

Total number of Bottles: 3
Duplicate Sample I.D.: ____
Field Blank I.D.: ____
Rinseate Sample I.D.: ____

3 Field Equipment

Type/Brand/Serial No./Material Units

Pump Type/Tubing Type: peristaltic / PE
Bailer Type: ____
Filter Type: ____
Temp/pH/E.C. meter: ____
Water Level Probe: Heron
Other: ____

4 Well Conditions

OK [X] Not OK [ ] Explain ____

APPENDIX B
CHEMICAL DATA QUALITY REVIEW AND LABORATORY REPORT
STAGE 1 GROUNDWATER QUALITY MONITORING ROUND 3: MARCH AND APRIL, 2013

APPENDIX B
CHEMICAL DATA QUALITY REVIEW AND LABORATORY REPORT
STAGE 1 GROUNDWATER QUALITY MONITORING
ROUND 3: MARCH AND APRIL, 2013

Data Quality Review

Seven water samples and one blind field duplicate were collected March 19, 2013, as part of the Third Round of Stage 1 groundwater monitoring for the Sitcum Waterway Remediation Project. Samples were shipped to ALS Environmental/Columbia Analytical Services of Kelso, Washington, for analysis. Samples were analyzed for dissolved metals and general chemistry parameters including total organic carbon (TOC) and salinity. The laboratory reported results as service request order K1302526.

Hart Crowser performed a data validation to assess whether analytical results met data quality objectives. Data review followed the format outlined in the National Functional Guidelines for Inorganic Superfund Data Review (EPA 2010) modified to include specific criteria of the individual analytical methods. The following criteria were evaluated in the data quality review process:

- Holding times;
- Instrument calibration;
- Blanks;
- Detection limits;
- Duplicates, blank spikes, and standard reference materials;
- Precision and accuracy;
- Completeness; and
- Data report formats.

Following the data validation, the results for dissolved arsenic were rejected (R) due to zero percent matrix spike recovery. The monitoring wells were resampled on April 16, 2013, for dissolved arsenic only. The laboratory was instructed to increase the spiking amount from 5 times the method detection limit (MDL) to 10 times the MDL to determine if it would improve matrix spike recoveries. The laboratory reported results as service request order K1303535. The spike recovery was improved, though still below project criteria, and results for dissolved arsenic were accepted as estimated values.

Overall Data Quality

The overall data quality objectives (DQOs), as set forth in the OMMP were achieved. The data for this project are acceptable for use with qualification. Detailed discussions are presented below for each analysis.

Sample Receiving Discrepancies

Laboratory Batch K1302526

The receiving temperature for one cooler was 6.1°C, which slightly exceeded the method recommended temperature of 2 to 6°C. Due to the slight exceedance, sample results were not qualified.

Samples MW-14, MW-1400, MW-12, and MW-1: The pH was out of control for sample preservation upon receipt at the laboratory. The pH was adjusted at the laboratory, and sample results were not qualified.

Laboratory Batch K1303535

The receiving temperatures for both coolers were below the method recommended temperature. As low temperatures would not significantly affect analytical results, no sample results were qualified.

Samples MW-12, MW-7, MW-1a, MW-15, and MW-5: The pH was out of control for sample preservation upon receipt at the laboratory. The pH was adjusted at the laboratory, and sample results were not qualified.

Inorganics

Laboratory Methods

The samples were filtered in the field. Samples were prepared by the reductive precipitation option described in EPA Method 1640. The samples were analyzed for dissolved metals by EPA Method 200.8.

Sample Preservation and Holding Times

Sample containers and preservation met requirements. Samples were extracted and analyzed within holding times.

Instrument Calibration

Instrument calibration was acceptable.

Blanks

No analytes were detected in laboratory method blanks.

Detection Limits

Specified analytical reporting and method detection limits were achieved.

Duplicates and Blank Spikes

Blank spike recoveries met QC criteria of 80 to 120 percent. Laboratory duplicate relative percent differences were within QC limits with the following exception:

- MW-5: The RPD for nickel exceeded the control limits. The result for nickel was qualified as estimated (J) in MW-5.

Sample MW-1400 was submitted as a blind field duplicate of sample MW-14 and field duplicate relative percent differences were within QC limits for all analytes with the following exceptions:

- MW-14/MW-1400: The RPDs for copper and zinc exceeded 20 percent. The results for copper were less than five times the reporting limit, and met the ± reporting limit criteria. The results for zinc were less than five times the reporting limit, but failed the ± reporting limit criteria. The results for zinc were qualified as estimated (J) in samples MW-14 and MW-1400.

Sample MW-15 was submitted as a blind field duplicate of sample MW-5 for the arsenic reanalysis. The sample and duplicate were non-detect for dissolved arsenic, and the RPD was not applicable.

Precision and Accuracy

Precision was assessed by laboratory duplicate analysis of sample MW-5 for metals determined by EPA Method 200.8. The RPD between duplicate measurements was within QC limits of 20 percent for analytes with concentrations greater than 5 times the reporting limit or ± the reporting limit for analytes with concentrations less than 5 times the reporting limit, with exceptions noted above.

Accuracy was assessed by matrix spike analysis for metals determined by EPA Method 200.8. Matrix spike recoveries were within limits of 75 to 125 percent for metals with the following exceptions:

- MW-5 MS (March analysis): Arsenic did not recover (0 percent). The recovery for arsenic was within the control limits for the laboratory control sample, indicating a matrix effect. Results for arsenic in the associated samples were rejected (R). The samples were recollected and reanalyzed with increased (10 times the MDL) spiking amounts.

- MW-5 MS (March analysis): The recovery for nickel fell below the control limits. The recovery for nickel was within the control limits for the laboratory control sample, indicating a matrix effect. Results for nickel in the associated samples (MW-10, MW-14, MW-1400, MW-12, MW-1, MW-1a, MW-5, and MW-7) were qualified as estimated (J).

- MW-5 MS (April analysis): The recovery for arsenic fell below the control limits. The recovery for arsenic was within the control limits for the laboratory control sample, indicating a matrix effect. Results for arsenic in the associated samples (MW-10, MW-14, MW-15, MW-12, MW-1, MW-1a, MW-5, and MW-7) were qualified as estimated (J).

Data Completeness

Completeness for metals analysis measurements is 100 percent.

Data Report Formats

Laboratory hardcopy results and electronic deliverables met required data reporting formats.

General Chemistry Parameters

Laboratory Methods

Samples were analyzed for salinity following Standard Method 2520B. Samples were analyzed for total organic carbon (TOC) following EPA Method 415.1.

Sample Preservation and Holding Times

Sample containers and preservation met requirements. Samples were prepared and analyzed within specified holding times.

Blanks

No analytes were detected in laboratory method blanks.

Detection Limits

Specified analytical reporting and method detection limits were achieved.

Duplicates and Blank Spikes

Laboratory duplicate relative percent differences were within QC limits. Blank spike recoveries met QC limits.

Precision and Accuracy

Precision was assessed by laboratory duplicate analysis of sample MW-5 for salinity. Duplicate results were prepared for all samples for TOC. Sample MW-1400 was submitted as a blind field duplicate of sample MW-14. The RPD between duplicate measurements were within QC limits of 20 percent for analytes with concentrations greater than 5 times the reporting limit or ± the reporting limit for analytes with concentrations less than 5 times the reporting limit.

Accuracy was assessed by matrix spike analysis. Matrix spike recoveries were within limits of 75 to 125 percent.

Data Completeness

Laboratory completeness is 100 percent.

Data Report Formats

Laboratory hardcopy results and electronic deliverables met required data reporting formats.

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LABORATORY REPORT
ALS/COLUMBIA ANALYTICAL SERVICES, INC.

April 8, 2013 Analytical Report for Service Request No: K1302526

Roger McGinnis
Hart Crowser, Incorporated
1700 Westlake Avenue North
Suite 200
Seattle, WA 98109-3056

RE: Sitcum Waterway/17472-01

Dear Roger:

Enclosed are the results of the samples submitted to our laboratory on March 21, 2013. For your reference, these analyses have been assigned our service request number K1302526.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at Lisa.Domenighini@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Lisa Domenighini
Project Manager

LD/mj

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Columbia Analytical Services, Inc. Part of the ALS Group An ALS Limited Company

Environmental www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	1704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS ENVIRONMENTAL

Client:	Hart Crowser, Incorporated	**Service Request No.:**	K1302526
Project:	Sitcum Waterway/ 17472-01	**Date Received:**	03/21/13
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eight water samples were received for analysis at ALS Environmental on 03/21/13. The samples were received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Dissolved Metals

Matrix Spike Recovery Exceptions:
The matrix spike recoveries of Arsenic and Nickel for sample MW-5 were outside control criteria for the reductive precipitation procedure. Certain matrix components can interfere with the procedure's reaction mechanism resulting in low recoveries. As a result of the interference, the reported values for these analyte may contain a low bias. The associated QA/QC results (i.e. Method Blank, LCSW, CCV, etc.) indicate the analysis was in control. No further corrective action was taken.

The matrix spike recovery of Nickel for sample MW-5was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential low bias in this matrix. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate analysis of Nickel in sample MW-5 was outside the normal ALS control limits. However, the analyte concentration in this sample was relatively low compared to the sensitivity of the procedure. Insufficient sample remain to re-prepare and reanalyze the sample. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____

Chain of Custody

Sample Custody Record

Samples Shipped to: _____

HARTCROWSER

Hart Crowser, Inc.
1700 Westlake Avenue North, Suite 200
Seattle, Washington 98109-6212
Office: 206.324.9530 • **Fax** 206.328.5581

JOB 17472-01 LAB NUMBER _____

PROJECT NAME Sitcum Waterway

HART CROWSER CONTACT Roger McGinnis

SAMPLED BY: KJH

REQUESTED ANALYSIS

LAB NO.	SAMPLE ID	DESCRIPTION	DATE	TIME	MATRIX	TOC 415.1	Salinity SM2520B	Diss. Metals (As, Cu, Pb, Ni, Zn)	NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
	MW-10		3/19/13	0915	Water	X	X	X	3	
	MW-14		↓	1216	↓	↓	↓	↓	↓	
	MW-1400		↓	1236	↓	↓	↓	↓	↓	
	MW-12		↓	1320	↓	↓	↓	↓	↓	
	MW-1		↓	1513	↓	↓	↓	↓	↓	
	MW-1a		↓	1436	↓	↓	↓	↓	↓	

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE	3/20/13	SIGNATURE	3/21/13
PRINT NAME Kerry Hosken	TIME	PRINT NAME	TIME
COMPANY Hart Crowser	0900	COMPANY ALS	0930

RELINQUISHED BY	DATE	RECEIVED BY	DATE
SIGNATURE	TIME	SIGNATURE	TIME
PRINT NAME		PRINT NAME	
COMPANY		COMPANY	

SPECIAL SHIPMENT HANDLING OR STORAGE REQUIREMENTS:

COOLER NO.: STORAGE LOCATION:

See Lab Work Order No. _____ for Other Contract Requirements

18 TOTAL NUMBER OF CONTAINERS

SAMPLE RECEIPT INFORMATION
CUSTODY SEALS:
☐YES ☐NO ☐N/A
GOOD CONDITION
☐YES ☐NO
TEMPERATURE _____
SHIPMENT METHOD: ☐HAND ☐COURIER ☐OVERNIGHT

TURNAROUND TIME:
☐ 24 HOURS ☐ 1 WEEK
☐48 HOURS ☐STANDARD
☐72 HOURS OTHER _____

White and Yellow Copies to Lab Pink to Project Manager Lab to Return White Copy to Hart Crowser Gold to Sample Custodian

PC Lisa

Cooler Receipt and Preservation Form

Client / Project: Hart Crowser Service Request K13 2526

Received: 3/21/13 Opened: 3/21/13 By: KD Unloaded: 3/21/13 By: KD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1, Front 1, Back
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Temp	Corr. Temp	Raw Blank	Corr. Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
6.0	6.1	5.6	5.7	+.1	335		7993 2331 3804	
5.7	5.9	5.2	5.4	+.2	333		7993 2333 1240	

SHORT HOLD TIME

7. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA ~~Y~~ N ***
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
MW-14	1-500mly				X	H_2SO_4	2ml	GenP/1-63N	KD	1020
MW-14*	1-1LR				X	HNO_3	4ml	K23022	KD	
MW-14DD	1-500mly				X	H_2SO_4	2ml	GenP/1-63N	KD	
MW-14DD*	1-1LR				X	HNO_3	4ml	K23022	KD	
MW-12	1-1LR				X	HNO_3	2ml	K23022	KD	
MW-1	1-1LR				X	HNO_3	2ml	K23022	KD	

Notes, Discrepancies, & Resolutions: *pH did not correct

* Did not receive bottles for total metals, aliquot 250ml from unpreserved bottle for total metals. Per Lisa switched test for Redppt T to Redppt D.

General Chemistry Parameters

Analytical Report

Client: Hart Crowser, Incorporated
Project: Sitcum Waterway/17472-01
Sample Matrix: Water
Analysis Method: 415.1

Service Request: K1302526
Date Collected: 03/19/13
Date Received: 03/21/13
Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
MW-10	K1302526-001	**0.55**	0.50	1	03/27/13 20:00	
MW-7	K1302526-002	**21**	10	20	03/22/12 20:09	
MW-5	K1302526-003	**7.6**	5.0	10	03/22/12 20:09	
MW-14	K1302526-004	**14**	10	20	03/22/12 20:09	
MW-1400	K1302526-005	**14.0**	5.0	10	03/22/12 20:09	
MW-12	K1302526-006	**5.0**	5.0	10	03/22/12 20:09	
MW-1a	K1302526-007	**5.9**	5.0	10	03/22/12 20:09	
MW-1	K1302526-008	**14**	10	20	03/22/12 20:09	
Method Blank	K1302526-MB1	ND	0.50	1	03/22/12 20:09	U
Method Blank	K1302526-MB2	ND	0.50	1	03/22/12 20:09	U
Method Blank	K1302526-MB3	ND	0.50	1	03/27/13 20:00	U
Method Blank	K1302526-MB4	ND	0.50	1	03/27/13 20:00	U

COLUMBIA ANALYTICAL SERVICES, INC.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project	Sitcum Waterway/17472-01	**Date Collected:**	03/19/13
Sample Matrix:	Water	**Date Received:**	03/21/13
Analysis Method:	415.1	**Units:**	mg/L
		Basis:	NA

Duplicate Sample Summary

Carbon, Total Organic

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
MW-10	K1302526-001DUP	0.50	0.55	0.53	0.542	3	20	03/27/13
MW-7	K1302526-002DUP	10	21	20	20.2	7	20	03/22/12
MW-5	K1302526-003DUP	5.0	7.6	7.4	7.52	3	20	03/22/12
MW-14	K1302526-004DUP	10	14	14	13.8	2	20	03/22/12
MW-1400	K1302526-005DUP	5.0	14.0	14.3	14.1	2	20	03/22/12
MW-12	K1302526-006DUP	5.0	5.0	ND	NC	NC	20	03/22/12
MW-1a	K1302526-007DUP	5.0	5.9	5.4	5.64	10	20	03/22/12
MW-1	K1302526-008DUP	10	14	13	13.9	8	20	03/22/12

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.
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QA/QC Report

Client: Hart Crowser, Incorporated
Project: Sitcum Waterway/17472-01
Sample Matrix: Water

Service Request: K1302526
Date Collected: 03/19/13
Date Received: 03/21/13
Date Analyzed: 03/22/12

Matrix Spike Summary
Carbon, Total Organic

Sample Name: MW-5
Lab Code: K1302526-003
Analysis Method: 415.1

Units: mg/L
Basis: NA

Matrix Spike
K1302526-003MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	7.6	261	250	101	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Hart Crowser, Incorporated
Project: Sitcum Waterway/17472-01
Sample Matrix: Water

Service Request: K1302526
Date Analyzed: 03/22/12

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method: 415.1

Units: mg/L
Basis: NA
Analysis Lot: 333650

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1302526-LCS1	23.2	22.7	102	83-117
Lab Control Sample	K1302526-LCS2	23.0	22.7	101	83-117

Client: Hart Crowser, Incorporated
Project: Sitcum Waterway/17472-01
Sample Matrix: Water

Service Request: K1302526
Date Analyzed: 03/27/13

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method: 415.1

Units: mg/L
Basis: NA
Analysis Lot: 334179

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1302526-LCS3	23.0	22.7	101	83-117
Lab Control Sample	K1302526-LCS4	23.0	22.7	102	83-117

Client: Hart Crowser, Incorporated **Service Request:** K1302526
Project: Sitcum Waterway/17472-01

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: 415.1 **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	333650	KQ1302938-47	03/22/12 20:09	25.0	24.9	100	90-110
CCV2	333650	KQ1302938-48	03/22/12 20:09	25.0	25.1	100	90-110
CCV3	333650	KQ1302938-49	03/22/12 20:09	25.0	24.9	100	90-110
CCV4	333650	KQ1302938-50	03/22/12 20:09	25.0	25.1	100	90-110
CCV5	333650	KQ1302938-51	03/22/12 20:09	25.0	24.9	99	90-110
CCV6	333650	KQ1302938-52	03/22/12 20:09	25.0	25.1	100	90-110
CCV7	333650	KQ1302938-53	03/22/12 20:09	25.0	24.6	99	90-110
CCV8	334179	KQ1303115-35	03/27/13 20:00	25.0	25.1	100	90-110
CCV9	334179	KQ1303115-36	03/27/13 20:00	25.0	24.8	99	90-110
CCV10	334179	KQ1303115-37	03/27/13 20:00	25.0	24.8	99	90-110
CCV11	334179	KQ1303115-38	03/27/13 20:00	25.0	24.6	98	90-110
CCV12	334179	KQ1303115-39	03/27/13 20:00	25.0	24.3	97	90-110

Client: Hart Crowser, Incorporated
Project: Sitcum Waterway/17472-01

Service Request: K1302526

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: 415.1

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result	Q
CCB1	333650	KQ1302938-54	03/22/12 20:09	0.50	ND	U
CCB2	333650	KQ1302938-55	03/22/12 20:09	0.50	ND	U
CCB3	333650	KQ1302938-56	03/22/12 20:09	0.50	ND	U
CCB4	333650	KQ1302938-57	03/22/12 20:09	0.50	ND	U
CCB5	333650	KQ1302938-58	03/22/12 20:09	0.50	ND	U
CCB6	333650	KQ1302938-59	03/22/12 20:09	0.50	ND	U
CCB7	333650	KQ1302938-60	03/22/12 20:09	0.50	ND	U
CCB8	334179	KQ1303115-40	03/27/13 20:00	0.50	ND	U
CCB9	334179	KQ1303115-41	03/27/13 20:00	0.50	ND	U
CCB10	334179	KQ1303115-42	03/27/13 20:00	0.50	ND	U
CCB11	334179	KQ1303115-43	03/27/13 20:00	0.50	ND	U
CCB12	334179	KQ1303115-44	03/27/13 20:00	0.50	ND	U

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project:	Sitcum Waterway/17472-01	**Date Collected:**	03/19/13
Sample Matrix:	Water	**Date Received:**	03/21/13
Analysis Method:	SM 2520 B	**Units:**	g/Kg
		Basis:	NA

Salinity

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
MW-10	K1302526-001	**19.6**	2.0	1	04/04/13 13:20	
MW-7	K1302526-002	**19.2**	2.0	1	04/04/13 13:20	
MW-5	K1302526-003	**11.1**	2.0	1	04/04/13 13:20	
MW-14	K1302526-004	**23.6**	2.0	1	04/04/13 13:20	
MW-1400	K1302526-005	**23.7**	2.0	1	04/04/13 13:20	
MW-12	K1302526-006	**22.3**	2.0	1	04/04/13 13:20	
MW-1a	K1302526-007	ND U	2.0	1	04/04/13 13:20	
MW-1	K1302526-008	ND U	2.0	1	04/04/13 13:20	
Method Blank	K1302526-MB1	ND U	2.0	1	04/04/13 13:20	

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project	Sitcum Waterway/17472-01	**Date Collected:**	03/19/13
Sample Matrix:	Water	**Date Received:**	03/21/13
		Date Analyzed:	04/04/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	MW-5	**Units:**	g/Kg
Lab Code:	K1302526-003	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1302526-003DUP Result	Average	RPD	RPD Limit
Salinity	SM 2520 B	2.0	11.1	10.9	11.0	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Hart Crowser, Incorporated
Project: Sitcum Waterway/17472-01
Sample Matrix: Water

Service Request: K1302526
Date Analyzed: 04/04/13

Lab Control Sample Summary
Salinity

Analysis Method: SM 2520 B

Units: g/Kg
Basis: NA
Analysis Lot: 335110

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1302526-LCS1	16.8	17.5	96	85-115

Work Request # Original ( ) 2046, 2097, 2170, 2320, 2239, 2264, 2196, 2231, 2245,
2274, 2299, 2363, 2487, 2526

Tier: II II II II I I II IV II IV II IV IV IV

Date Analyzed: 3/22/13

Analyst: CES

Analysis: TOC/DOC

DOC: 333649
TOC: 333650

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:
2046-1/1d, 2046-2/2d, 2097-4/4d, 2097-2/2d RPD not within acceptance limits; the sample results are < 5x the MRL.

RA 2526-1 TOC (over diluted).

2526-6 MRL elevated due to sample matrix.

Final Approved by: [signature] Date: 3/25/13

DQREPORT

Analytical Results Summary

ıstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 333649 **Method/Testcode:** SM 5310 C/TOC D

) Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
302046-001	Carbon, Dissolved Organic (DOC)	N/A		Water	0.54 mg/L	10 ml	0.54 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302046-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.58 mg/L	10 ml	0.58 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302046-003	Carbon, Dissolved Organic (DOC)	N/A		Water	0.12 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
302046-004	Carbon, Dissolved Organic (DOC)	N/A		Water	0.11 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
302046-005	Carbon, Dissolved Organic (DOC)	N/A		Water	1.11 mg/L	10 ml	1.11 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302046-006	Carbon, Dissolved Organic (DOC)	N/A		Water	0.62 mg/L	10 ml	1.2 mg/L	2	0.2	1.0			3/22/13 20:09	N	II
302046-007	Carbon, Dissolved Organic (DOC)	N/A		Water	0.90 mg/L	10 ml	0.90 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302046-008	Carbon, Dissolved Organic (DOC)	N/A		Water	0.76 mg/L	10 ml	7.6 mg/L	10	0.8	5.0			3/22/13 20:09	N	II
302046-009	Carbon, Dissolved Organic (DOC)	N/A		Water	0.80 mg/L	10 ml	0.80 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302046-010	Carbon, Dissolved Organic (DOC)	N/A		Water	0.76 mg/L	10 ml	0.76 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302046-011	Carbon, Dissolved Organic (DOC)	N/A		Water	0.61 mg/L	10 ml	0.61 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302046-012	Carbon, Dissolved Organic (DOC)	N/A		Water	5.66 mg/L	10 ml	5.66 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302097-001	Carbon, Dissolved Organic (DOC)	N/A		Water	0.34 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
302097-002	Carbon, Dissolved Organic (DOC)	N/A		Water	1.13 mg/L	10 ml	1.13 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302097-003	Carbon, Dissolved Organic (DOC)	N/A		Water	0.79 mg/L	10 ml	0.79 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302097-004	Carbon, Dissolved Organic (DOC)	N/A		Water	1.35 mg/L	10 ml	1.35 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302170-001	Carbon, Dissolved Organic	N/A		Water	5.34 mg/L	10 ml	5.34 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
302320-001	Carbon, Dissolved Organic	N/A		Water	5.52 mg/L	10 ml	5.52 mg/L	1	0.07	0.50			3/22/13 20:09	N	II
)1302933-01	Carbon, Dissolved Organic (DOC)	MS	K1302046-001	Water	25.94 mg/L	10 ml	25.9 mg/L	1	0.07	0.50	102		3/22/13 20:09	N	II
)1302933-02	Carbon, Dissolved Organic (DOC)	DUP	K1302046-001	Water	0.39 mg/L	10 ml	0.39 mg/L J	1	0.07	0.50		32*	3/22/13 20:09	N	II
)1302933-03	Carbon, Dissolved Organic (DOC)	DUP	K1302046-002	Water	0.45 mg/L	10 ml	0.45 mg/L J	1	0.07	0.50		26*	3/22/13 20:09	N	II
)1302933-04	Carbon, Dissolved Organic (DOC)	DUP	K1302046-003	Water	0.11 mg/L	10 ml	0.11 mg/L J	1	0.07	0.50		NC	3/22/13 20:09	N	II
)1302933-05	Carbon, Dissolved Organic (DOC)	DUP	K1302046-004	Water	0.11 mg/L	10 ml	0.11 mg/L J	1	0.07	0.50		NC	3/22/13 20:09	N	II
)1302933-06	Carbon, Dissolved Organic (DOC)	DUP	K1302046-005	Water	1.10 mg/L	10 ml	1.10 mg/L	1	0.07	0.50		1	3/22/13 20:09	N	II
)1302933-07	Carbon, Dissolved Organic (DOC)	DUP	K1302046-006	Water	0.60 mg/L	10 ml	1.2 mg/L	2	0.2	1.0		2	3/22/13 20:09	N	II

ıdicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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Analytical Results Summary

ıstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 333649 **Method/Testcode:** SM 5310 C/TOC D

) Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
1302933-08	Carbon, Dissolved Organic (DOC)	DUP	K1302046-007	Water	0.82 mg/L	10 ml	0.82 mg/L	1	0.07	0.50		10	3/22/13 20:09	N	II
1302933-09	Carbon, Dissolved Organic (DOC)	DUP	K1302046-008	Water	0.74 mg/L	10 ml	7.4 mg/L	10	0.8	5.0		3	3/22/13 20:09	N	II
1302933-10	Carbon, Dissolved Organic (DOC)	DUP	K1302046-009	Water	0.82 mg/L	10 ml	0.82 mg/L	1	0.07	0.50		2	3/22/13 20:09	N	II
1302933-11	Carbon, Dissolved Organic (DOC)	DUP	K1302046-010	Water	0.70 mg/L	10 ml	0.70 mg/L	1	0.07	0.50		7	3/22/13 20:09	N	II
1302933-12	Carbon, Dissolved Organic (DOC)	DUP	K1302046-011	Water	0.62 mg/L	10 ml	0.62 mg/L	1	0.07	0.50		2	3/22/13 20:09	N	II
1302933-13	Carbon, Dissolved Organic (DOC)	DUP	K1302046-012	Water	5.61 mg/L	10 ml	5.61 mg/L	1	0.07	0.50		<1	3/22/13 20:09	N	II
1302933-14	Carbon, Dissolved Organic (DOC)	MS	K1302097-001	Water	26.10 mg/L	10 ml	26.1 mg/L	1	0.07	0.50	104		3/22/13 20:09	N	II
1302933-15	Carbon, Dissolved Organic (DOC)	DUP	K1302097-001	Water	0.32 mg/L	10 ml	0.32 mg/L J	1	0.07	0.50		NC	3/22/13 20:09	N	II
1302933-16	Carbon, Dissolved Organic (DOC)	DUP	K1302097-002	Water	0.98 mg/L	10 ml	0.98 mg/L	1	0.07	0.50		14*	3/22/13 20:09	N	II
1302933-17	Carbon, Dissolved Organic (DOC)	DUP	K1302097-003	Water	0.80 mg/L	10 ml	0.80 mg/L	1	0.07	0.50		<1	3/22/13 20:09	N	II
1302933-18	Carbon, Dissolved Organic (DOC)	DUP	K1302097-004	Water	1.18 mg/L	10 ml	1.18 mg/L	1	0.07	0.50		14*	3/22/13 20:09	N	II
1302933-19	Carbon, Dissolved Organic	MS	K1302170-001	Water	31.86 mg/L	10 ml	31.9 mg/L	1	0.07	0.50	106		3/22/13 20:09	N	II
1302933-20	Carbon, Dissolved Organic	DUP	K1302170-001	Water	5.32 mg/L	10 ml	5.32 mg/L	1	0.07	0.50		<1	3/22/13 20:09	N	II
1302933-21	Carbon, Dissolved Organic	MS	K1302320-001	Water	31.35 mg/L	10 ml	31.4 mg/L	1	0.07	0.50	103		3/22/13 20:09	N	II
1302933-22	Carbon, Dissolved Organic	DUP	K1302320-001	Water	5.34 mg/L	10 ml	5.34 mg/L	1	0.07	0.50		3	3/22/13 20:09	N	II
1302933-23	Carbon, Dissolved Organic	MB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
1302933-23	Carbon, Dissolved Organic (DOC)	MB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
1302933-24	Carbon, Dissolved Organic	MB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
1302933-24	Carbon, Dissolved Organic (DOC)	MB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
1302933-25	Carbon, Dissolved Organic	LCS		Water	23.08 mg/L	10 ml	23.1 mg/L	1	0.07	0.50	102		3/22/13 20:09	N	II
1302933-25	Carbon, Dissolved Organic (DOC)	LCS		Water	23.08 mg/L	10 ml	23.1 mg/L	1	0.07	0.50	102		3/22/13 20:09	N	II
1302933-26	Carbon, Dissolved Organic	LCS		Water	23.04 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	102		3/22/13 20:09	N	II
1302933-26	Carbon, Dissolved Organic (DOC)	LCS		Water	23.04 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	102		3/22/13 20:09	N	II
1302933-27	Carbon, Dissolved Organic	CCV		Water	25.29 mg/L	10 ml	25.3 mg/L	1			101		3/22/13 20:09	N	II
1302933-27	Carbon, Dissolved Organic (DOC)	CCV		Water	25.29 mg/L	10 ml	25.3 mg/L	1			101		3/22/13 20:09	N	II
1302933-28	Carbon, Dissolved Organic	CCV		Water	25.15 mg/L	10 ml	25.2 mg/L	1			101		3/22/13 20:09	N	II
1302933-28	Carbon, Dissolved Organic (DOC)	CCV		Water	25.15 mg/L	10 ml	25.2 mg/L	1			101		3/22/13 20:09	N	II
1302933-29	Carbon, Dissolved Organic	CCV		Water	24.93 mg/L	10 ml	24.9 mg/L	1			100		3/22/13 20:09	N	II

ıdicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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Analytical Results Summary

ıstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 333649 **Method/Testcode:** SM 5310 C/TOC D

ɔ Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
)1302933-29	Carbon, Dissolved Organic (DOC)	CCV		Water	24.93 mg/L	10 ml	24.9 mg/L	1			100		3/22/13 20:09	N	II
)1302933-30	Carbon, Dissolved Organic	CCV		Water	25.08 mg/L	10 ml	25.1 mg/L	1			100		3/22/13 20:09	N	II
)1302933-30	Carbon, Dissolved Organic (DOC)	CCV		Water	25.08 mg/L	10 ml	25.1 mg/L	1			100		3/22/13 20:09	N	II
)1302933-31	Carbon, Dissolved Organic	CCB		Water	0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
)1302933-31	Carbon, Dissolved Organic (DOC)	CCB		Water	0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
)1302933-32	Carbon, Dissolved Organic	CCB		Water	0.05 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
)1302933-32	Carbon, Dissolved Organic (DOC)	CCB		Water	0.05 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
)1302933-33	Carbon, Dissolved Organic	CCB		Water	-0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
)1302933-33	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
)1302933-34	Carbon, Dissolved Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II
)1302933-34	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/13 20:09	N	II

CES 3/25/13

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ıdicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

ıstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 333650 **Method/Testcode:** 415.1/TOC T

) Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
302196-001	Carbon, Total Organic	N/A		Water	1.37 mg/L	10 ml	1.37 mg/L	1	0.07	0.50			3/22/12 20:09	N	II
302196-002	Carbon, Total Organic	N/A		Water	0.27 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	II
302196-003	Carbon, Total Organic	N/A		Water	2.88 mg/L	10 ml	5.8 mg/L	2	0.2	1.0			3/22/12 20:09	N	II
302196-004	Carbon, Total Organic	N/A		Water	3.27 mg/L	10 ml	6.5 mg/L	2	0.2	1.0			3/22/12 20:09	N	II
302231-003	Carbon, Total Organic	N/A		Water	3.85 mg/L	10 ml	7.7 mg/L	2	0.2	1.0			3/22/12 20:09	N	V
302239-001	Carbon, Total Organic	N/A		Water	0.61 mg/L	10 ml	0.61 mg/L	1	0.07	0.50			3/22/12 20:09	N	I
302245-001	Carbon, Total Organic	N/A		Water	0.72 mg/L	10 ml	0.72 mg/L	1	0.07	0.50			3/22/12 20:09	N	II
302264-001	Carbon, Total Organic	N/A		Water	0.87 mg/L	10 ml	0.87 mg/L	1	0.07	0.50			3/22/12 20:09	N	I
302264-002	Carbon, Total Organic	N/A		Water	1.58 mg/L	10 ml	1.58 mg/L	1	0.07	0.50			3/22/12 20:09	N	I
302264-003	Carbon, Total Organic	N/A		Water	0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
302264-004	Carbon, Total Organic	N/A		Water	0.27 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
302264-005	Carbon, Total Organic	N/A		Water	0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
302264-006	Carbon, Total Organic	N/A		Water	0.25 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
302274-002	Carbon, Total Organic	N/A		Water	7.68 mg/L	10 ml	7.68 mg/L	1	0.07	0.50			3/22/12 20:09	N	V
302274-003	Carbon, Total Organic	N/A		Water	2.48 mg/L	10 ml	24.8 mg/L	10	0.8	5.0			3/22/12 20:09	N	V
302274-004	Carbon, Total Organic	N/A		Water	2.61 mg/L	10 ml	26.1 mg/L	10	0.8	5.0			3/22/12 20:09	N	V
302274-005	Carbon, Total Organic	N/A		Water	1.19 mg/L	10 ml	1.19 mg/L	1	0.07	0.50			3/22/12 20:09	N	V
302274-006	Carbon, Total Organic	N/A		Water	6.47 mg/L	10 ml	12.9 mg/L	2	0.2	1.0			3/22/12 20:09	N	V
302274-007	Carbon, Total Organic	N/A		Water	2.82 mg/L	10 ml	56 mg/L	20	2	10			3/22/12 20:09	N	V
302299-001	Carbon, Total Organic	N/A		Water	2.83 mg/L	10 ml	283 mg/L	100	8	50			3/22/12 20:09	N	II
302299-002	Carbon, Total Organic	N/A		Water	3.55 mg/L	10 ml	7.1 mg/L	2	0.2	1.0			3/22/12 20:09	N	II
302299-003	Carbon, Total Organic	N/A		Water	2.60 mg/L	10 ml	2.60 mg/L	1	0.07	0.50			3/22/12 20:09	N	II
302363-001	Carbon, Total Organic	N/A		Storm Water	2.12 mg/L	10 ml	10.6 mg/L	5	0.4	2.5			3/22/12 20:09	N	IV
302487-001	Carbon, Total Organic	N/A		Storm Water	3.82 mg/L	10 ml	3.82 mg/L	1	0.07	0.50			3/22/12 20:09	N	IV
302526-001	Carbon, Total Organic	N/A		Water	0.29 mg/L	10 ml	1.0 mg/L U	2	0.2	1.0			3/22/12 20:09	N	IV
302526-002	Carbon, Total Organic	N/A		Water	1.04 mg/L	10 ml	21 mg/L	20	2	10			3/22/12 20:09	N	IV
302526-003	Carbon, Total Organic	N/A		Water	0.76 mg/L	10 ml	7.6 mg/L	10	0.8	5.0			3/22/12 20:09	Y	IV
302526-004	Carbon, Total Organic	N/A		Water	0.70 mg/L	10 ml	14 mg/L	20	2	10			3/22/12 20:09	N	IV
302526-005	Carbon, Total Organic	N/A		Water	1.40 mg/L	10 ml	14.0 mg/L	10	0.8	5.0			3/22/12 20:09	N	IV
302526-006	Carbon, Total Organic	N/A		Water	0.50 mg/L	10 ml	5.0 mg/L	10	0.8	5.0			3/22/12 20:09	N	IV
302526-007	Carbon, Total Organic	N/A		Water	0.59 mg/L	10 ml	5.9 mg/L	10	0.8	5.0			3/22/12 20:09	N	IV
302526-008	Carbon, Total Organic	N/A		Water	0.72 mg/L	10 ml	14 mg/L	20	2	10			3/22/12 20:09	N	IV
)1302938-01	Carbon, Total Organic	MS	K1302239-001	Water	26.15 mg/L	10 ml	26.2 mg/L	1	0.07	0.50	102		3/22/12 20:09	N	I
)1302938-02	Carbon, Total Organic	DUP	K1302239-001	Water	0.60 mg/L	10 ml	0.60 mg/L	1	0.07	0.50		2	3/22/12 20:09	N	I

ıdicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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Analytical Results Summary

ıstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 333650 **Method/Testcode:** SM 5310 C/TOC T

) Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
1302938-03	Carbon, Total Organic	MS	K1302264-001	Water	26.70 mg/L	10 ml	26.7 mg/L	1	0.07	0.50			3/22/12 20:09	N	I
1302938-04	Carbon, Total Organic	DUP	K1302264-001	Water	0.82 mg/L	10 ml	0.82 mg/L	1	0.07	0.50		6	3/22/12 20:09	N	I
1302938-05	Carbon, Total Organic	DUP	K1302264-002	Water	1.44 mg/L	10 ml	1.44 mg/L	1	0.07	0.50		9	3/22/12 20:09	N	I
1302938-06	Carbon, Total Organic	DUP	K1302264-003	Water	0.31 mg/L	10 ml	0.31 mg/L J	1	0.07	0.50		NC	3/22/12 20:09	N	I
1302938-07	Carbon, Total Organic	DUP	K1302264-004	Water	0.27 mg/L	10 ml	0.27 mg/L J	1	0.07	0.50		NC	3/22/12 20:09	N	I
1302938-08	Carbon, Total Organic	DUP	K1302264-005	Water	0.30 mg/L	10 ml	0.30 mg/L J	1	0.07	0.50		NC	3/22/12 20:09	N	I
1302938-09	Carbon, Total Organic	DUP	K1302264-006	Water	0.24 mg/L	10 ml	0.24 mg/L J	1	0.07	0.50		NC	3/22/12 20:09	N	I
1302938-10	Carbon, Total Organic	MS	K1302196-001	Water	27.15 mg/L	10 ml	27.2 mg/L	1	0.07	0.50	103		3/22/12 20:09	N	II
1302938-11	Carbon, Total Organic	DUP	K1302196-001	Water	1.38 mg/L	10 ml	1.38 mg/L	1	0.07	0.50		<1	3/22/12 20:09	N	II
1302938-12	Carbon, Total Organic	DUP	K1302196-002	Water	0.12 mg/L	10 ml	0.12 mg/L J	1	0.07	0.50		NC	3/22/12 20:09	N	II
1302938-13	Carbon, Total Organic	DUP	K1302196-003	Water	2.76 mg/L	10 ml	5.5 mg/L	2	0.2	1.0		4	3/22/12 20:09	N	II
1302938-14	Carbon, Total Organic	DUP	K1302196-004	Water	3.25 mg/L	10 ml	6.5 mg/L	2	0.2	1.0		<1	3/22/12 20:09	N	II
1302938-15	Carbon, Total Organic	MS	K1302231-003	Water	30.19 mg/L	10 ml	60.4 mg/L	2	0.2	1.0	105		3/22/12 20:09	N	V
1302938-16	Carbon, Total Organic	DUP	K1302231-003	Water	3.81 mg/L	10 ml	7.6 mg/L	2	0.2	1.0		<1	3/22/12 20:09	N	V
1302938-17	Carbon, Total Organic	MS	K1302245-001	Water	24.52 mg/L	10 ml	24.5 mg/L	1	0.07	0.50	95		3/22/12 20:09	N	II
1302938-18	Carbon, Total Organic	DUP	K1302245-001	Water	0.59 mg/L	10 ml	0.59 mg/L	1	0.07	0.50		20	3/22/12 20:09	N	II
1302938-19	Carbon, Total Organic	MS	K1302274-002	Water	34.11 mg/L	10 ml	34.1 mg/L	1	0.07	0.50	106		3/22/12 20:09	N	V
1302938-20	Carbon, Total Organic	DUP	K1302274-002	Water	7.47 mg/L	10 ml	7.47 mg/L	1	0.07	0.50		3	3/22/12 20:09	N	V
1302938-21	Carbon, Total Organic	DUP	K1302274-003	Water	2.40 mg/L	10 ml	24.0 mg/L	10	0.8	5.0		3	3/22/12 20:09	N	V
1302938-22	Carbon, Total Organic	DUP	K1302274-004	Water	2.53 mg/L	10 ml	25.3 mg/L	10	0.8	5.0		3	3/22/12 20:09	N	V
1302938-23	Carbon, Total Organic	DUP	K1302274-005	Water	1.23 mg/L	10 ml	1.23 mg/L	1	0.07	0.50		3	3/22/12 20:09	N	V
1302938-24	Carbon, Total Organic	DUP	K1302274-006	Water	6.44 mg/L	10 ml	12.9 mg/L	2	0.2	1.0		<1	3/22/12 20:09	N	V
1302938-25	Carbon, Total Organic	DUP	K1302274-007	Water	2.77 mg/L	10 ml	55 mg/L	20	2	10		2	3/22/12 20:09	N	V
1302938-26	Carbon, Total Organic	DUP	K1302299-001	Water	3.02 mg/L	10 ml	302 mg/L	100	8	50		6	3/22/12 20:09	N	II
1302938-27	Carbon, Total Organic	DUP	K1302299-002	Water	3.54 mg/L	10 ml	7.1 mg/L	2	0.2	1.0		<1	3/22/12 20:09	N	II
1302938-28	Carbon, Total Organic	MS	K1302299-003	Water	27.39 mg/L	10 ml	27.4 mg/L	1	0.07	0.50	99		3/22/12 20:09	N	II
1302938-29	Carbon, Total Organic	DUP	K1302299-003	Water	2.53 mg/L	10 ml	2.53 mg/L	1	0.07	0.50		3	3/22/12 20:09	N	II
1302938-30	Carbon, Total Organic	MS	K1302363-001	Storm Water	27.58 mg/L	10 ml	138 mg/L	5	0.4	2.5	102		3/22/12 20:09	N	IV
1302938-31	Carbon, Total Organic	DUP	K1302363-001	Storm Water	2.02 mg/L	10 ml	10.1 mg/L	5	0.4	2.5		5	3/22/12 20:09	N	IV
1302938-32	Carbon, Total Organic	MS	K1302487-001	Storm Water	29.59 mg/L	10 ml	29.6 mg/L	1	0.07	0.50	103		3/22/12 20:09	N	IV
1302938-33	Carbon, Total Organic	DUP	K1302487-001	Storm Water	3.77 mg/L	10 ml	3.77 mg/L	1	0.07	0.50		1	3/22/12 20:09	N	IV
1302938-34	Carbon, Total Organic	DUP	K1302526-001	Water	0.23 mg/L	10 ml	0.5 mg/L J	2	0.2	1.0		NC	3/22/12 20:09	N	IV
1302938-35	Carbon, Total Organic	DUP	K1302526-002	Water	0.98 mg/L	10 ml	20 mg/L	20	2	10		7	3/22/12 20:09	N	IV

dicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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Analytical Results Summary

ıstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 333650 **Method/Testcode:** 415.1/TOC T

) Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
1302938-36	Carbon, Total Organic	MS	K1302526-003	Water	26.07 mg/L	10 ml	261 mg/L	10	0.8	5.0	101		3/22/12 20:09	N	IV
1302938-37	Carbon, Total Organic	DUP	K1302526-003	Water	0.74 mg/L	10 ml	7.4 mg/L	10	0.8	5.0		3	3/22/12 20:09	N	IV
1302938-38	Carbon, Total Organic	DUP	K1302526-004	Water	0.68 mg/L	10 ml	14 mg/L	20	2	10		2	3/22/12 20:09	N	IV
1302938-39	Carbon, Total Organic	DUP	K1302526-005	Water	1.43 mg/L	10 ml	14.3 mg/L	10	0.8	5.0		2	3/22/12 20:09	N	IV
1302938-40	Carbon, Total Organic	DUP	K1302526-006	Water	0.49 mg/L	10 ml	4.9 mg/L J	10	0.8	5.0		3	3/22/12 20:09	N	IV
1302938-41	Carbon, Total Organic	DUP	K1302526-007	Water	0.54 mg/L	10 ml	5.4 mg/L	10	0.8	5.0		10	3/22/12 20:09	N	IV
1302938-42	Carbon, Total Organic	DUP	K1302526-008	Water	0.67 mg/L	10 ml	13 mg/L	20	2	10		8	3/22/12 20:09	N	IV
1302938-43	Carbon, Total Organic	MB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-43	Carbon, Total Organic	MB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-44	Carbon, Total Organic	MB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-44	Carbon, Total Organic	MB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-45	Carbon, Total Organic	LCS		Water	23.17 mg/L	10 ml	23.2 mg/L	1	0.07	0.50	102		3/22/12 20:09	N	I
1302938-45	Carbon, Total Organic	LCS		Water	23.17 mg/L	10 ml	23.2 mg/L	1	0.07	0.50	102		3/22/12 20:09	N	I
1302938-46	Carbon, Total Organic	LCS		Water	22.96 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	101		3/22/12 20:09	N	I
1302938-46	Carbon, Total Organic	LCS		Water	22.96 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	101		3/22/12 20:09	N	I
1302938-47	Carbon, Total Organic	CCV		Water	24.93 mg/L	10 ml	24.9 mg/L	1			100		3/22/12 20:09	N	I
1302938-47	Carbon, Total Organic	CCV		Water	24.93 mg/L	10 ml	24.9 mg/L	1			100		3/22/12 20:09	N	I
1302938-48	Carbon, Total Organic	CCV		Water	25.08 mg/L	10 ml	25.1 mg/L	1			100		3/22/12 20:09	N	I
1302938-48	Carbon, Total Organic	CCV		Water	25.08 mg/L	10 ml	25.1 mg/L	1			100		3/22/12 20:09	N	I
1302938-49	Carbon, Total Organic	CCV		Water	24.93 mg/L	10 ml	24.9 mg/L	1			100		3/22/12 20:09	N	I
1302938-49	Carbon, Total Organic	CCV		Water	24.93 mg/L	10 ml	24.9 mg/L	1			100		3/22/12 20:09	N	I
1302938-50	Carbon, Total Organic	CCV		Water	25.05 mg/L	10 ml	25.1 mg/L	1			100		3/22/12 20:09	N	I
1302938-50	Carbon, Total Organic	CCV		Water	25.05 mg/L	10 ml	25.1 mg/L	1			100		3/22/12 20:09	N	I
1302938-51	Carbon, Total Organic	CCV		Water	24.87 mg/L	10 ml	24.9 mg/L	1			100		3/22/12 20:09	N	I
1302938-51	Carbon, Total Organic	CCV		Water	24.87 mg/L	10 ml	24.9 mg/L	1			100		3/22/12 20:09	N	I
1302938-52	Carbon, Total Organic	CCV		Water	25.05 mg/L	10 ml	25.1 mg/L	1			100		3/22/12 20:09	N	I
1302938-52	Carbon, Total Organic	CCV		Water	25.05 mg/L	10 ml	25.1 mg/L	1			100		3/22/12 20:09	N	I
1302938-53	Carbon, Total Organic	CCV		Water	24.64 mg/L	10 ml	24.6 mg/L	1			98		3/22/12 20:09	N	I
1302938-53	Carbon, Total Organic	CCV		Water	24.64 mg/L	10 ml	24.6 mg/L	1			98		3/22/12 20:09	N	I
1302938-54	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-54	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-55	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-55	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-56	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-56	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
1302938-57	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I

ıdicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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CES 3/25/13

Analytical Results Summary

nstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 333650 **Method/Testcode:** SM 5310 C/TOC T

b Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
)1302938-57	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
)1302938-58	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
)1302938-58	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
)1302938-59	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
)1302938-59	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
)1302938-60	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I
)1302938-60	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/22/12 20:09	N	I

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adicates Final Result is not yet adjusted for Solids because it has not yet been determined.

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

DOC: 333649

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1		0.0279	-0.0279	-0.0279	<0.5	
2	ICV	1		0.0279	-0.0279	-0.0279	<0.5	
3	ICB	1		0.0279	-0.0279	-0.0279	<0.5	
4	CCV1	1	25.315	0.0279	25.2870	25.287	25.3	
5	CCB1	1	0.094	0.0279	0.0658	0.0658	<0.50	
6	MB1	1	0.040	0.0279	0.0123	0.0123	<0.50	
7	LCS1	1	23.110	0.0279	23.0822	23.0822	23.1	
8	K1302046-001	1	0.563	0.0279	0.5352	0.5352	0.54	
9	K1302046-001d	1	0.417	0.0279	0.3887	0.3887	<0.50	
10	K1302046-001ms	1	25.965	0.0279	25.9373	25.9373	25.9	
11	K1302046-002	1	0.612	0.0279	0.5842	0.5842	0.58	
12	K1302046-002d	1	0.478	0.0279	0.4505	0.4505	<0.50	
13	K1302046-003	1	0.150	0.0279	0.1219	0.1219	<0.50	
14	K1302046-003d	1	0.137	0.0279	0.1093	0.1093	<0.50	
15	K1302046-004	1	0.134	0.0279	0.1058	0.1058	<0.50	
16	K1302046-004d	1	0.133	0.0279	0.1051	0.1051	<0.50	
17	K1302046-005	1	1.138	0.0279	1.1105	1.1105	1.11	
18	K1302046-005d	1	1.124	0.0279	1.0959	1.0959	1.10	
19	K1302046-006	2	0.644	0.0279	0.6157	1.2314	1.23	
20	K1302046-006d	2	0.630	0.0279	0.6023	1.2046	1.20	
21	CCV2	1	25.180	0.0279	25.1517	25.1517	25.2	
22	CCB2	1	0.080	0.0279	0.0516	0.0516	<0.50	
23	K1302046-007	1	0.931	0.0279	0.9031	0.9031	0.90	
24	K1302046-007d	1	0.845	0.0279	0.8175	0.8175	0.82	
25	K1302046-008	10	0.786	0.0279	0.7578	7.578	7.58	

ICV = 25.0 ppm (Ref.#11-GEN-05-20A) ICAL Date 1/11/13 ICAL ID#:11-GEN-05-18K

LCS =22.7 ppm APG 4013 Lot #180411 (REF#TOC1-09-L)

CCV = 25.0 ppm (Ref.#11-GEN-05-20A)

Spike: 0.05 ml of 5000 ppm stock ---> 10.0 ml so =25.0 x Dilution Factor (Ref.# 11-GEN-05-15E)

		date	time
Analyzed By: CCS	Date Analyzed	3/22/2013	20:09:00
Reviewed By:	Date Reviewed	3/25/13	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1302046-008d	10	0.764	0.0279	0.7364	7.364	7.36	
27	K1302046-009	1	0.829	0.0279	0.8011	0.8011	0.80	
28	K1302046-009d	1	0.848	0.0279	0.8199	0.8199	0.82	
29	K1302046-010	1	0.787	0.0279	0.7587	0.7587	0.76	
30	K1302046-010d	1	0.732	0.0279	0.7043	0.7043	0.70	
31	K1302046-011	1	0.636	0.0279	0.6078	0.6078	0.61	
32	K1302046-011d	1	0.648	0.0279	0.6203	0.6203	0.62	
33	K1302046-012	1	5.690	0.0279	5.6622	5.6622	5.66	
34	K1302046-012d	1	5.635	0.0279	5.6074	5.6074	5.61	
35	K1302097-001	1	0.363	0.0279	0.3355	0.3355	<0.50	
36	K1302097-001d	1	0.343	0.0279	0.3153	0.3153	<0.50	
37	K1302097-001ms	1	26.130	0.0279	26.1017	26.1017	26.1	
38	K1302097-002	1	1.162	0.0279	1.1340	1.134	1.13	
39	K1302097-002d	1	1.013	0.0279	0.9848	0.9848	0.98	
40	K1302097-003	1	0.817	0.0279	0.7891	0.7891	0.79	
41	K1302097-003d	1	0.823	0.0279	0.7951	0.7951	0.80	
42	CCV3	1	24.962	0.0279	24.9341	24.9341	24.9	
43	CCB3	1	0.016	0.0279	-0.0123	-0.0123	<0.50	
44	MB2	1	0.000	0.0279	-0.0279	-0.0279	<0.50	
45	LCS2	1	23.070	0.0279	23.0417	23.0417	23.0	
46	K1302097-004	1	1.379	0.0279	1.3508	1.3508	1.35	
47	K1302097-004d	1	1.204	0.0279	1.1756	1.1756	1.18	
48	K1302170-001	1	5.370	0.0279	5.3423	5.3423	5.34	
49	K1302170-001d	1	5.345	0.0279	5.3171	5.3171	5.32	
50	K1302170-001ms	1	31.888	0.0279	31.8598	31.8598	31.9	

Analyzed By:	CES	Date Analyzed	3/22/2013 20:09:00
Reviewed By:		Date Reviewed	3/25/13

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method: Oxidation EPA 415.1/9060

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	K1302320-001	1	5.550	0.0279	5.5222	5.5222	5.52	
52	K1302320-001d	1	5.370	0.0279	5.3419	5.3419	5.34	
53	K1302320-001ms	1	31.381	0.0279	31.3534	31.3534	31.4	
54	RB	1	0.183	0.0279	0.1549	0.1549	<0.50	
55	RB	1	0.003	0.0279	-0.0253	-0.0253	<0.50	
56	CCV4	1	25.113	0.0279	25.0848	25.0848	25.1	
57	CCB4	1	0.000	0.0279	-0.0279	-0.0279	<0.50	

CES
3/25/13

Analyzed By:	CES	Date Analyzed	3/22/2013 20:09:00
Reviewed By:		Date Reviewed	3/25/13

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

TOC: 333650

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1		0.0279	-0.0279	-0.0279	<0.5	
2	CCV3	1	24.962	0.0279	24.9341	24.9341	24.9	
3	CCB3	1	0.016	0.0279	-0.0123	-0.0123	<0.50	
4	K1302239-001	1	0.643	0.0279	0.6147	0.6147	0.61	
5	K1302239-001d	1	0.629	0.0279	0.6011	0.6011	0.60	
6	K1302239-001ms	1	26.179	0.0279	26.1508	26.1508	26.2	
7	CCV4	1	25.113	0.0279	25.0848	25.0848	25.1	
8	CCB4	1	0.000	0.0279	-0.0279	-0.0279	<0.50	
9	K1302264-001	1	0.899	0.0279	0.8711	0.8711	0.87	
10	K1302264-001d	1	0.847	0.0279	0.8190	0.819	0.82	
11	K1302264-001ms	1	26.727	0.0279	26.6987	26.6987	26.7	
12	K1302264-002	1	1.607	0.0279	1.5795	1.5795	1.58	
13	K1302264-002d	1	1.471	0.0279	1.4434	1.4434	1.44	
14	K1302264-003	1	0.347	0.0279	0.3189	0.3189	<0.50	
15	K1302264-003d	1	0.338	0.0279	0.3103	0.3103	<0.50	
16	K1302264-004	1	0.295	0.0279	0.2671	0.2671	<0.50	
17	K1302264-004d	1	0.298	0.0279	0.2705	0.2705	<0.50	
18	K1302264-005	1	0.346	0.0279	0.3180	0.318	<0.50	
19	K1302264-005d	1	0.323	0.0279	0.2951	0.2951	<0.50	
20	K1302264-006	1	0.274	0.0279	0.2464	0.2464	<0.50	
21	K1302264-006d	1	0.268	0.0279	0.2402	0.2402	<0.50	
22	K1302196-001	1	1.400	0.0279	1.3725	1.3725	1.37	
23	K1302196-001d	1	1.412	0.0279	1.3844	1.3844	1.38	
24	K1302196-001ms	1	27.183	0.0279	27.1548	27.1548	27.2	
25	K1302196-002	1	0.301	0.0279	0.2728	0.2728	<0.50	

ICV = 25.0 ppm (Ref.#11-GEN-05-20A) ICAL Date 1/11/13 ICAL ID#:11-GEN-05-18K

LCS =22.7 ppm APG 4013 Lot #180411 (REF#TOC1-09-L)

CCV = 25.0 ppm (Ref.#11-GEN-05-20A)

Spike: 0.05 ml of 5000 ppm stock ---> 10.0 ml so =25.0 x Dilution Factor (Ref.# 11-GEN-05-15E)

		date	time
Analyzed By: CES	Date Analyzed	3/22/2012	20:09:00
Reviewed By: [illegible]	Date Reviewed	3/28/13	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method: Oxidation EPA 415.1/9060

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1302196-002d	1	0.150	0.0279	0.1224	0.1224	<0.50	
27	CCV5	1	24.963	0.0279	24.9349	24.9349	24.9	
28	CCB5	1	0.000	0.0279	-0.0279	-0.0279	<0.50	
29	MB3	1	0.000	0.0279	-0.0279	-0.0279	<0.50	
30	LCS3	1	23.199	0.0279	23.1706	23.1706	23.2	
31	K1302196-003	2	2.913	0.0279	2.8847	5.7694	5.77	
32	K1302196-003d	2	2.786	0.0279	2.7579	5.5158	5.52	
33	K1302196-004	2	3.295	0.0279	3.2673	6.5346	6.53	
34	K1302196-004d	2	3.276	0.0279	3.2476	6.4952	6.50	
35	K1302231-003	2	3.876	0.0279	3.8484	7.6968	7.70	
36	K1302231-003d	2	3.842	0.0279	3.8142	7.6284	7.63	
37	K1302231-003ms	2	30.219	0.0279	30.1908	60.3816	60.4	
38	K1302245-001	1	0.745	0.0279	0.7173	0.7173	0.72	
39	K1302245-001d	1	0.616	0.0279	0.5880	0.588	0.59	
40	K1302245-001ms	1	24.546	0.0279	24.5179	24.5179	24.5	
41	K1302274-002	1	7.712	0.0279	7.6840	7.684	7.68	
42	K1302274-002d	1	7.502	0.0279	7.4745	7.4745	7.47	
43	K1302274-002ms	1	34.134	0.0279	34.1058	34.1058	34.1	
44	CCV6	1	25.082	0.0279	25.0543	25.0543	25.1	
45	CCB6	1	0.000	0.0279	-0.0279	-0.0279	<0.50	
46	K1302274-003	10	2.509	0.0279	2.4809	24.809	24.8	
47	K1302274-003d	10	2.433	0.0279	2.4047	24.047	24.0	
48	K1302274-004	10	2.639	0.0279	2.6110	26.11	26.1	
49	K1302274-004d	10	2.557	0.0279	2.5295	25.295	25.3	
50	K1302274-005	1	1.214	0.0279	1.1865	1.1865	1.19	

Analyzed By:	CGS	Date Analyzed	3/22/2012 20:09:00
Reviewed By:	[illegible]	Date Reviewed	3/25/13

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L
51	K1302274-005d	1	1.255	0.0279	1.2266	1.2266	1.23
52	K1302274-006	2	6.499	0.0279	6.4710	12.942	12.9
53	K1302274-006d	2	6.469	0.0279	6.4411	12.8822	12.9
54	K1302274-007	20	2.846	0.0279	2.8183	56.366	56.4
55	K1302274-007d	20	2.795	0.0279	2.7670	55.34	55.3
56	K1302299-001	100	2.857	0.0279	2.8294	282.94	283
57	K1302299-001d	100	3.047	0.0279	3.0186	301.86	302
58	K1302299-002	2	3.576	0.0279	3.5476	7.0952	7.10
59	K1302299-002d	2	3.572	0.0279	3.5438	7.0876	7.09
60	K1302299-003	1	2.625	0.0279	2.5966	2.5966	2.60
61	K1302299-003d	1	2.556	0.0279	2.5280	2.528	2.53
62	K1302299-003ms	1	27.414	0.0279	27.3863	27.3863	27.4
63	K1302363-001	5	2.153	0.0279	2.1249	10.6245	10.6
64	K1302363-001d	5	2.047	0.0279	2.0193	10.0965	10.1
65	CCV7	1	24.893	0.0279	24.8655	24.8655	24.9
66	CCB7	1	0.000	0.0279	-0.0279	-0.0279	<0.50
67	MB4	1	0.000	0.0279	-0.0279	-0.0279	<0.50
68	LCS4	1	22.990	0.0279	22.9622	22.9622	23.0
69	K1302363-001ms	5	27.610	0.0279	27.5821	137.9105	138
70	K1302487-001	1	3.846	0.0279	3.8181	3.8181	3.82
71	K1302487-001d	1	3.800	0.0279	3.7722	3.7722	3.77
72	K1302487-001ms	1	29.618	0.0279	29.5903	29.5903	29.6
73	RB	1	0.086	0.0279	0.0578	0.0578	<0.50
74	RB	1	0.000	0.0279	-0.0279	-0.0279	<0.50
75	K1302526-001	2	0.315	0.0279	0.2873	0.5746	0.57

Analyzed By:	CES	Date Analyzed	3/22/2012 20:09:00
Reviewed By:		Date Reviewed	3/25/13

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L
76	K1302526-001d	2	0.260	0.0279	0.2318	0.4636	<0.50
77	K1302526-002	20	1.069	0.0279	1.0415	20.83	20.8
78	K1302526-002d	20	1.003	0.0279	0.9752	19.504	19.5
79	K1302526-003	10	0.791	0.0279	0.7630	7.63	7.63
80	K1302526-003d	10	0.769	0.0279	0.7414	7.414	7.41
81	K1302526-003ms	10	26.099	0.0279	26.0710	260.71	261
82	CCV8	1	25.079	0.0279	25.0509	25.0509	25.1
83	CCB8	1	0.000	0.0279	-0.0279	-0.0279	<0.50
84	K1302526-004	20	0.728	0.0279	0.7002	14.004	14.0
85	K1302526-004d	20	0.712	0.0279	0.6845	13.69	13.7
86	K1302526-005	10	1.429	0.0279	1.4007	14.007	14.0
87	K1302526-005d	10	1.454	0.0279	1.4258	14.258	14.3
88	K1302526-006	10	0.533	0.0279	0.5049	5.049	5.05
89	K1302526-006d	10	0.519	0.0279	0.4908	4.908	4.91
90	K1302526-007	10	0.620	0.0279	0.5921	5.921	5.92
91	K1302526-007d	10	0.564	0.0279	0.5365	5.365	5.37
92	K1302526-008	20	0.750	0.0279	0.7223	14.446	14.4
93	K1302526-008d	20	0.698	0.0279	0.6696	13.392	13.4
94	RB	1	0.000	0.0279	-0.0279	-0.0279	<0.50
95	RB	1	0.000	0.0279	-0.0279	-0.0279	<0.50
96	CCV9	1	24.669	0.0279	24.6410	24.641	24.6
97	CCB9	1	0.000	0.0279	-0.0279	-0.0279	<0.50
						CES 3/25/13	

Analyzed By:	CES	Date Analyzed	3/22/2012 20:09:00
Reviewed By:	A	Date Reviewed	3/25/13

0.094				OBSERVATIONS	12	ABOVE
0.040	0.040	0.040	0.040	STD Deviation	0.03383	0.0402
0.080				AVERAGE	0.01908	ABOVE
0.016	0.016	0.016	0.016	UCL	0.05291	0.0156
0.000				LCL	-0.01475	0
0.000						0
0.000						0
0.000				OBSERVATIONS	2	0
0.000				STD Deviation	0.01739	0
0.000				AVERAGE	0.02790	0
0.000				UCL	0.04529	0
0.000				LCL	0.01051	0
						0
						0
				OBSERVATIONS	2	0
				STD Deviation	0.01739	0
				AVERAGE	0.02790	0
				UCL	0.04529	0
				LCL	0.01051	0
						0
						0
				OBSERVATIONS	2	0
				STD Deviation	0.02460	0
				AVERAGE	0.02790	0
						0
						0
						0
						0
						0
						0

DOC: 333649
TOC: 333650

Schedule: 032213

Version: 12
Instrument: Fusion1
Last Saved by: Gen Chem Lab (Fusion1)
Last Saved on: 2013/03/22 20:40 - Friday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Done
(Clean)	Clean	Clean		1	True	Done
(Clean)	Clean	Clean		1	True	Done
(Blank)	Blank	Reagent/Acid Blank		1	True	Done
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Done
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Done
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Done
2	Check Standard	[TOC] LCS [22.7 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Pending
3	Sample	k1302046-001.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	k1302046-001.02 ms DOC	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
5	Sample	k1302046-002.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	k1302046-003.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	k1302046-004.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	k1302046-005.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	k1302046-006.02 2x DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	k1302046-007.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	k1302046-008.02 10x DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	k1302046-009.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	k1302046-010.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	k1302046-011.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	k1302046-012.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	k1302097-001.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	k1302097-001.02 ms DOC	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
18	Sample	k1302097-002.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	k1302097-003.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Check Standard	[TOC] LCS [22.7 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	k1302097-004.02 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	k1302170-001.03 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	k1302170-001.03 ms DOC	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
24	Sample	k1302320-001.03 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	k1302320-001.03 ms DOC	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
26	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	k1302239-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	k1302239-001.02 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1302264-001.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1302264-001.05 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
31	Sample	K1302264-002.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1302264-003.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1302264-004.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1302264-005.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1302264-006.05	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1302196-001.32	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1302196-001.32 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
38	Sample	K1302196-002.32	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 032213

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Check Standard	[TOC] LCS [22.7 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1302196-003.32 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1302196-004.32 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1302231-003.07 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1302231-003.07 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
44	Sample	K1302245-001.28	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1302245-001.28 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
46	Sample	K1302274-002.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1302274-002.07 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1302274-003.07 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1302274-004.07 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1302274-005.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1302274-006.07 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1302274-007.07 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1302299-001.08 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1302299-002.08 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1302299-003.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1302299-003.08 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
57	Sample	K1302363-001.35 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Check Standard	[TOC] LCS [22.7 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1302363-001.35 ms 5x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
60	Sample	K1302487-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1302487-001.03 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
62	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample	K1302526-001.03 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
64	Sample	K1302526-002.03 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample	K1302526-003.09 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1302526-003.09 ms 10x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1302526-004.03 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1302526-005.03 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample	K1302526-006.03 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
70	Sample	K1302526-007.03 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
71	Sample	K1302526-008.03 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 032213
Friday, March 22, 2013 06:18 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2013/03/25 15:24 - Monday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	032213	Engine Version:	1.1.0.189
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Gen Chem Lab (Fusion1) (v2) Gen Chem Lab (Fusion1) (v3) Gen Chem Lab (Fusion1) (v4) Gen Chem Lab (Fusion1) (v6) Gen Chem Lab (Fusion1) (v7) Gen Chem Lab (Fusion1) (v9) Gen Chem Lab (Fusion1) (v10) Gen Chem Lab (Fusion1) (v11) Gen Chem Lab (Fusion1) (v12)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
_	(clean)		Clean	2013/03/22 18:18

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.65	15.33	2.68	49.72	05:19
2	TC Clean	13.61	15.93	2.32	50.61	03:56
3	TC Clean	3.97	6.55	2.58	51.24	03:45
4	TC Clean	2.57	5.03	2.45	51.31	03:44

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
_	(clean)		Clean	2013/03/22 18:40

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.89	3.35	2.46	49.88	05:08

2	TC Clean	6.07	8.63	2.56	51.38	03:57
3	TC Clean	2.41	5.11	2.69	51.07	03:43
4	TC Clean	2.01	4.69	2.67	50.54	03:41

Sample Type: Clean From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
_	(clean)		Clean	2013/03/22 19:01

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.84	3.38	2.54	50.39	05:08
2	TC Clean	5.54	8.04	2.50	50.65	03:58
3	TC Clean	2.34	5.12	2.78	50.38	03:44
4	TC Clean	1.62	4.38	2.75	50.60	03:42

Sample Type: Blank (Creating v409) From Schedule Version 6

	Pos	Analysis Type	Sample ID	Start Time
_	(blank)		Reagent/Acid Blank	2013/03/22 19:23

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.81	3.30	2.48	50.26	05:08
2	TC Clean	5.49	8.37	2.88	50.70	03:56
3	TC Clean	2.40	5.22	2.82	51.42	03:43
4	TC Clean	2.31	5.12	2.80	51.04	03:42
5	Reagent Blank	4.88	7.65	2.77	50.28	04:58
6	Acid Blank	0.84	3.45	2.62	50.45	05:26

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.3922 ppm (PASS)**	0.0000 ppm	0%	2013/03/22 19:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

D	TOC	0 ppm	1	0.3922	3.9217	11.99	14.78	2.78	60.12	09:45

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**25.3149 ppm (PASS)**	0.0000 ppm	0%	2013/03/22 20:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.3149	253.1485	209.41	212.18	2.77	60.48	09:45

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0937 ppm (PASS)**	0.0000 ppm	0%	2013/03/22 20:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0937	0.9373	9.63	12.49	2.86	60.38	09:44

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 11

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	1	TOC	MB1	0.0402 ppm	0.0000 ppm	0.0000%	2013/03/22 20:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0402	0.4024	8.64	11.38	2.74	60.42	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> LCS From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	2	TOC	22.7000	1:1	[TOC] LCS [22.7 ppm]	0 / infinity (NA / NA)	**23.1101 ppm (PASS)**	0.0000 ppm	0%	2013/03/22 20:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	22.7 ppm	1	23.1101	231.1012	191.95	194.88	2.93	60.28	09:45

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	22.7 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	3	TOC	k1302046-001.02 DOC	0.4899 ppm	0.1036 ppm	21.1600%	2013/03/22 21:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5631	5.6315	12.78	15.69	2.91	60.70	09:35
2	TOC	0.4166	4.1658	11.62	14.44	2.82	60.16	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	4	TOC	k1302046-001.02 ms DOC	25.9652 ppm	0.0000 ppm	0.0000%	2013/03/22 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.9652	259.6518	214.00	216.82	2.83	60.13	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	5	TOC	k1302046-002.02 DOC	0.5453 ppm	0.0945 ppm	17.3400%	2013/03/22 21:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6121	6.1213	13.17	16.29	3.12	60.18	09:35
2	TOC	0.4784	4.7844	12.11	15.10	2.99	60.14	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
_	6	TOC	k1302046-003.02 DOC	0.1435 ppm	0.0089 ppm	6.2200%	2013/03/22 22:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1498	1.4982	9.51	12.46	2.95	60.16	09:35
2	TOC	0.1372	1.3720	9.41	12.28	2.87	60.69	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	7	TOC	k1302046-004.02 DOC	0.1333 ppm	0.0004 ppm	0.3300%	2013/03/22 22:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1337	1.3366	9.38	12.14	2.76	60.68	09:41
2	TOC	0.1330	1.3303	9.38	12.23	2.86	60.68	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	8	TOC	k1302046-005.02 DOC	1.1311 ppm	0.0104 ppm	0.9200%	2013/03/22 23:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1384	11.3844	17.34	20.13	2.79	60.20	09:35
2	TOC	1.1238	11.2380	17.23	20.22	2.99	60.25	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	9	TOC	k1302046-006.02 2x DOC	0.6369 ppm	0.0095 ppm	1.4900%	2013/03/22 23:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6436	6.4356	13.42	16.02	2.60	60.20	09:39
2	TOC	0.6302	6.3018	13.32	15.98	2.66	60.28	09:34

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**25.1796 ppm**	0.0000 ppm	0%	2013/03/22 23:54

							(PASS)			

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1796	251.7965	208.34	211.16	2.82	60.59	09:39

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 . ppm]	0 / infinity (NA / NA)	**0.0795 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 00:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0795	0.7946	9.52	12.41	2.89	60.38	09:46

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	10	TOC	k1302046-007.02 DOC	0.8882 ppm	0.0605 ppm	6.8100%	2013/03/23 00:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9310	9.3102	15.70	18.33	2.63	60.26	09:36
2	TOC	0.8454	8.4543	15.02	17.93	2.91	60.21	09:39

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	11	TOC	k1302046-008.02 10x DOC	0.7750 ppm	0.0152 ppm	1.9600%	2013/03/23 00:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7857	7.8572	14.55	17.49	2.94	60.30	09:38
2	TOC	0.7643	7.6425	14.38	17.29	2.91	60.38	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	12	TOC	k1302046-009.02 DOC	0.8384 ppm	0.0133 ppm	1.5900%	2013/03/23 01:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8290	8.2902	14.89	17.73	2.84	60.38	09:39
2	TOC	0.8478	8.4783	15.04	18.03	2.99	60.45	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	13	TOC	k1302046-010.02 DOC	0.7594 ppm	0.0385 ppm	5.0700%	2013/03/23 01:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7866	7.8660	14.55	17.44	2.89	60.26	09:40
2	TOC	0.7322	7.3219	14.12	17.16	3.03	60.16	09:33

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	14	TOC	k1302046-011.02 DOC	0.6420 ppm	0.0088 ppm	1.3800%	2013/03/23 02:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6357	6.3574	13.36	16.22	2.86	60.35	09:36
2	TOC	0.6482	6.4824	13.46	16.23	2.77	60.63	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	15	TOC	k1302046-012.02 DOC	5.6627 ppm	0.0387 ppm	0.6800%	2013/03/23 02:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.6901	56.9006	53.40	56.17	2.78	60.22	09:39
2	TOC	5.6353	56.3527	52.96	55.80	2.84	60.18	09:34

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	16	TOC	k1302097-001.02 DOC	0.3533 ppm	0.0143 ppm	4.0400%	2013/03/23 02:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3634	3.6343	11.20	14.22	3.02	60.21	09:37

2	TOC	0.3432	3.4323	11.04	13.88	2.83	60.25	09:36

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	17	TOC	k1302097-001.02 ms DOC	26.1296 ppm	0.0000 ppm	0.0000%	2013/03/23 03:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.1296	261.2955	215.30	218.16	2.86	60.22	09:42

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	18	TOC	k1302097-002.02 DOC	1.0873 ppm	0.1055 ppm	9.7000%	2013/03/23 03:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1619	11.6192	17.53	20.38	2.85	60.42	09:39
2	TOC	1.0127	10.1270	16.34	19.28	2.94	60.23	09:39

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	19	TOC	k1302097-003.02 DOC	0.8200 ppm	0.0042 ppm	0.5100%	2013/03/23 04:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8170	8.1702	14.80	17.85	3.06	60.48	09:34
2	TOC	0.8230	8.2296	14.84	17.85	3.01	60.36	09:32

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**24.9620 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 04:30

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9620	249.6200	206.61	209.50	2.89	60.21	09:39

Completion State	Success Action	Method	Calibration	STD Conc - Pos B

Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0156 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 04:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0156	0.1558	9.01	11.82	2.81	60.38	09:39

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/23 04:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.96	10.77	2.81	60.56	09:43

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> LCS From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	2	TOC	22.7000	1:1	[TOC] LCS [22.7 ppm]	0 / infinity (NA / NA)	**23.0696 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 05:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	22.7 ppm	1	23.0696	230.6960	191.62	194.66	3.04	60.67	09:46

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	22.7 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
_	21	TOC	k1302097-004.02 DOC	1.2911 ppm	0.1239 ppm	9.6000%	2013/03/23 05:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3787	13.7869	19.24	22.12	2.88	60.39	09:37
2	TOC	1.2035	12.0346	17.86	20.81	2.95	60.20	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	22	TOC	k1302170-001.03 DOC	5.3576 ppm	0.0178 ppm	0.3300%	2013/03/23 05:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.3702	53.7016	50.86	53.77	2.91	60.34	09:34
2	TOC	5.3450	53.4504	50.66	53.60	2.94	60.12	09:39

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	23	TOC	k1302170-001.03 ms DOC	31.8877 ppm	0.0000 ppm	0.0000%	2013/03/23 06:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.8877	318.8769	260.91	263.85	2.94	60.63	09:43

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	24	TOC	k1302320-001.03 DOC	5.4599 ppm	0.1275 ppm	2.3300%	2013/03/23 06:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.5501	55.5006	52.29	55.24	2.95	60.22	09:39
2	TOC	5.3698	53.6978	50.86	53.87	3.01	60.15	09:38

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	25	TOC	k1302320-001.03 ms DOC	31.3813 ppm	0.0000 ppm	0.0000%	2013/03/23 06:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.3813	313.8132	256.90	259.53	2.63	60.29	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	26	TOC	RB	0.0927 ppm	0.1274 ppm	137.4200%	2013/03/23 07:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1828	1.8277	9.77	12.74	2.97	60.59	09:39
2	TOC	0.0026	0.0262	8.34	11.37	3.02	60.57	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	27	TOC	k1302239-001.02	0.6358 ppm	0.0096 ppm	1.5000%	2013/03/23 07:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6426	6.4255	13.41	16.35	2.94	60.28	09:36
2	TOC	0.6290	6.2905	13.31	16.13	2.82	60.49	09:33

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	28	TOC	k1302239-001.02 ms	26.1787 ppm	0.0000 ppm	0.0000%	2013/03/23 08:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.1787	261.7866	215.69	218.55	2.86	60.38	09:43

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**25.1127 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 08:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1127	251.1274	207.81	210.52	2.71	60.36	09:38

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 08:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.58	11.50	2.92	60.65	09:47

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	29	TOC	K1302264-001.05	0.8730 ppm	0.0368 ppm	4.2100%	2013/03/23 08:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8990	8.9896	15.44	18.35	2.90	60.49	09:39
2	TOC	0.8469	8.4694	15.03	17.87	2.84	60.10	09:36

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	30	TOC	K1302264-001.05 ms	26.7266 ppm	0.0000 ppm	0.0000%	2013/03/23 09:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.7266	267.2656	220.03	222.76	2.73	60.38	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	31	TOC	K1302264-002.05	1.5394 ppm	0.0962 ppm	6.2500%	2013/03/23 09:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6074	16.0744	21.06	23.77	2.71	60.69	09:40
2	TOC	1.4713	14.7135	19.98	22.86	2.89	60.70	09:38

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	32	TOC	K1302264-003.05	0.3425 ppm	0.0061 ppm	1.7700%	2013/03/23 09:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3468	3.4676	11.07	13.75	2.68	60.16	09:35
2	TOC	0.3382	3.3818	11.00	13.78	2.78	60.71	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	33	TOC	K1302264-004.05	0.2967 ppm	0.0024 ppm	0.8100%	2013/03/23 10:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2950	2.9500	10.66	13.56	2.90	60.60	09:39
2	TOC	0.2984	2.9841	10.69	13.38	2.70	60.39	09:34

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	34	TOC	K1302264-005.05	0.3345 ppm	0.0162 ppm	4.8300%	2013/03/23 10:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3459	3.4588	11.06	13.92	2.86	60.13	09:32
2	TOC	0.3230	3.2303	10.88	13.63	2.75	60.59	09:42

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	35	TOC	K1302264-006.05	0.2712 ppm	0.0044 ppm	1.6100%	2013/03/23 11:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2743	2.7430	10.50	13.30	2.80	60.50	09:43
2	TOC	0.2681	2.6811	10.45	13.28	2.83	60.40	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	36	TOC	K1302196-001.32	1.4063 ppm	0.0084 ppm	0.6000%	2013/03/23 11:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4004	14.0040	19.42	22.35	2.93	60.59	09:38

2	TOC	1.4123	14.1227	19.51	22.34	2.83	60.69	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	37	TOC	K1302196-001.32 ms	27.1827 ppm	0.0000 ppm	0.0000%	2013/03/23 12:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.1827	271.8268	223.64	226.47	2.83	60.68	09:48

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	38	TOC	K1302196-002.32	0.2255 ppm	0.1063 ppm	47.1500%	2013/03/23 12:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3007	3.0068	10.70	13.53	2.83	60.59	09:40
2	TOC	0.1503	1.5033	9.51	12.29	2.78	60.26	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**24.9628 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 12:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9628	249.6276	206.62	209.34	2.72	60.16	09:43

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 12:54

	Base		Rep							Run

Pos	Analysis Type	ID	#	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Time
D	TOC	0 ppm	1	0.0000	0.0000	8.06	10.74	2.68	60.28	09:44

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/23 13:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.21	9.93	2.71	60.39	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> LCS From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	2	TOC	22.7000	1:1	[TOC] LCS [22.7 ppm]	0 / infinity (NA / NA)	**23.1985 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 13:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	22.7 ppm	1	23.1985	231.9849	192.64	195.42	2.77	60.66	09:42

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	22.7 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	40	TOC	K1302196-003.32 2x	2.8492 ppm	0.0896 ppm	3.1500%	2013/03/23 13:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9126	29.1256	31.39	34.32	2.93	60.67	09:39
2	TOC	2.7858	27.8581	30.39	33.12	2.73	60.58	09:39

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
_	41	TOC	K1302196-004.32 2x	3.2854 ppm	0.0139 ppm	0.4200%	2013/03/23 14:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2952	32.9520	34.43	37.34	2.92	60.33	09:39
2	TOC	3.2755	32.7551	34.27	37.04	2.77	60.29	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	42	TOC	K1302231-003.07 2x	3.8592 ppm	0.0242 ppm	0.6300%	2013/03/23 14:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8763	38.7631	39.03	41.77	2.74	60.51	09:39
2	TOC	3.8421	38.4209	38.76	41.48	2.73	60.63	09:42

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	43	TOC	K1302231-003.07 ms 2x	30.2187 ppm	0.0000 ppm	0.0000%	2013/03/23 14:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	30.2187	302.1874	247.69	250.55	2.86	60.63	09:47

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	44	TOC	K1302245-001.28	0.6806 ppm	0.0914 ppm	13.4300%	2013/03/23 15:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7452	7.4519	14.23	16.86	2.63	60.48	09:42
2	TOC	0.6159	6.1592	13.20	16.05	2.85	60.35	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	45	TOC	K1302245-001.28 ms	24.5458 ppm	0.0000 ppm	0.0000%	2013/03/23 15:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	24.5458	245.4581	202.75	205.55	2.79	60.60	09:45

Dilution	Blank Contribution	Method	Calibration

1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	46	TOC	K1302274-002.07	7.6071 ppm	0.1481 ppm	1.9500%	2013/03/23 15:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.7119	77.1187	69.41	72.13	2.72	60.30	09:38
2	TOC	7.5024	75.0243	67.75	70.71	2.96	60.47	09:38

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	47	TOC	K1302274-002.07 ms	34.1337 ppm	0.0000 ppm	0.0000%	2013/03/23 16:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	34.1337	341.3370	278.70	281.66	2.96	60.30	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**25.0822 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 16:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0822	250.8219	207.57	210.44	2.88	60.30	09:43

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 16:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.29	11.02	2.73	60.62	09:44

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	48	TOC	K1302274-003.07 10x	2.4707 ppm	0.0539 ppm	2.1800%	2013/03/23 16:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5088	25.0883	28.20	30.90	2.71	60.44	09:38
2	TOC	2.4326	24.3258	27.59	30.56	2.96	60.40	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	49	TOC	K1302274-004.07 10x	2.5981 ppm	0.0576 ppm	2.2200%	2013/03/23 17:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6389	26.3886	29.23	31.85	2.63	60.47	09:36
2	TOC	2.5574	25.5743	28.58	31.35	2.77	60.30	09:38

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	50	TOC	K1302274-005.07	1.2345 ppm	0.0283 ppm	2.2900%	2013/03/23 17:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2144	12.1444	17.94	20.69	2.75	60.32	09:41
2	TOC	1.2545	12.5446	18.26	20.71	2.45	60.44	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	51	TOC	K1302274-006.07 2x	6.4840 ppm	0.0212 ppm	0.3300%	2013/03/23 18:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.4989	64.9891	59.80	62.41	2.61	60.36	09:40
2	TOC	6.4690	64.6899	59.56	62.35	2.78	60.55	09:41

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	52	TOC	K1302274-007.07 20x	2.8205 ppm	0.0362 ppm	1.2800%	2013/03/23 18:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8462	28.4615	30.87	33.77	2.90	60.49	09:36
2	TOC	2.7949	27.9490	30.46	33.34	2.88	60.59	09:36

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	53	TOC	K1302299-001.08 100x	2.9519 ppm	0.1338 ppm	4.5300%	2013/03/23 19:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8573	28.5726	30.96	33.86	2.90	60.44	09:40
2	TOC	3.0465	30.4650	32.46	35.14	2.69	60.50	09:42

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	54	TOC	K1302299-002.08 2x	3.5736 ppm	0.0027 ppm	0.0700%	2013/03/23 19:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5755	35.7547	36.64	39.37	2.73	60.24	09:40
2	TOC	3.5717	35.7168	36.61	39.48	2.87	60.56	09:42

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	55	TOC	K1302299-003.08	2.5902 ppm	0.0485 ppm	1.8700%	2013/03/23 19:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6245	26.2447	29.11	31.80	2.69	60.54	09:40
2	TOC	2.5559	25.5592	28.57	31.41	2.84	60.45	09:38

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	56	TOC	K1302299-003.08 ms	27.4142 ppm	0.0000 ppm	0.0000%	2013/03/23 20:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.4142	274.1421	225.48	228.11	2.63	60.63	09:42

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	57	TOC	K1302363-001.35 5x	2.1000 ppm	0.0747 ppm	3.5600%	2013/03/23 20:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1528	21.5282	25.38	28.23	2.85	60.40	09:35
2	TOC	2.0472	20.4715	24.54	27.36	2.82	60.51	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**24.8934 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 21:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8934	248.9345	206.07	208.77	2.70	60.45	09:44

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 21:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.90	10.77	2.88	60.24	09:41

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

_	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/23 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.03	9.84	2.81	60.40	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> LCS From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	2	TOC	22.7000	1:1	[TOC] LCS [22.7 ppm]	0 / infinity (NA / NA)	**22.9901 ppm (PASS)**	0.0000 ppm	0%	2013/03/23 21:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	22.7 ppm	1	22.9901	229.9006	190.99	193.72	2.72	60.53	09:44

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	22.7 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	59	TOC	K1302363-001.35 ms 5x	27.6100 ppm	0.0000 ppm	0.0000%	2013/03/23 21:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.6100	276.1002	227.03	229.90	2.88	60.66	09:46

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	60	TOC	K1302487-001.03	3.8230 ppm	0.0325 ppm	0.8500%	2013/03/23 22:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8460	38.4601	38.79	41.68	2.89	60.64	09:42
2	TOC	3.8001	38.0006	38.42	41.08	2.66	60.47	09:38

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

_	61	TOC	K1302487-001.03 ms	29.6182 ppm	0.0000 ppm	0.0000%	2013/03/23 22:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.6182	296.1819	242.93	245.85	2.92	60.30	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	62	TOC	RB	0.0428 ppm	0.0606 ppm	141.4200%	2013/03/23 22:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0857	0.8569	9.00	11.74	2.73	60.55	09:38
2	TOC	0.0000	0.0000	7.83	10.52	2.69	60.14	09:36

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	63	TOC	K1302526-001.03 2x	0.2874 ppm	0.0393 ppm	13.6700%	2013/03/23 23:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3152	3.1520	10.82	13.71	2.89	60.54	09:38
2	TOC	0.2597	2.5965	10.38	13.31	2.93	60.69	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	64	TOC	K1302526-002.03 20x	1.0362 ppm	0.0469 ppm	4.5200%	2013/03/23 23:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0694	10.6939	16.79	19.78	2.98	60.51	09:36
2	TOC	1.0031	10.0311	16.27	18.95	2.68	60.50	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	65	TOC	K1302526-003.09 10x	0.7801 ppm	0.0153 ppm	1.9600%	2013/03/24 00:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7909	7.9089	14.59	17.53	2.94	60.16	09:39
2	TOC	0.7693	7.6930	14.42	17.40	2.99	60.66	09:40

Dilution	Blank Contribution	Method	Calibration

1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	66	TOC	K1302526-003.09 ms 10x	26.0989 ppm	0.0000 ppm	0.0000%	2013/03/24 00:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.0989	260.9887	215.06	217.88	2.82	60.57	09:43

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**25.0788 ppm (PASS)**	0.0000 ppm	0%	2013/03/24 00:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0788	250.7878	207.54	210.34	2.80	60.32	09:42

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/24 01:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.67	10.66	2.99	60.55	09:45

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample — From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	67	TOC	K1302526-004.03 20x	0.7203 ppm	0.0112 ppm	1.5500%	2013/03/24 01:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7281	7.2815	14.09	17.05	2.96	60.20	09:37
2	TOC	0.7124	7.1237	13.97	16.87	2.91	60.42	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	68	TOC	K1302526-005.03 10x	1.4411 ppm	0.0178 ppm	1.2300%	2013/03/24 01:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4286	14.2855	19.64	22.45	2.81	60.41	09:35
2	TOC	1.4537	14.5368	19.84	22.80	2.96	60.21	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	69	TOC	K1302526-006.03 10x	0.5258 ppm	0.0100 ppm	1.9000%	2013/03/24 02:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5328	5.3285	12.54	15.56	3.02	60.23	09:38
2	TOC	0.5187	5.1871	12.43	15.30	2.87	60.32	09:36

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	70	TOC	K1302526-007.03 10x	0.5922 ppm	0.0393 ppm	6.6300%	2013/03/24 02:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6200	6.1996	13.23	15.99	2.75	60.30	09:36
2	TOC	0.5644	5.6441	12.79	15.51	2.71	60.43	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	71	TOC	K1302526-008.03 20x	0.7239 ppm	0.0373 ppm	5.1500%	2013/03/24 03:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7502	7.5024	14.27	17.06	2.79	60.43	09:38
2	TOC	0.6975	6.9747	13.85	16.77	2.93	60.37	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711	CAS_salt_010711

(v3) (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	72	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/24 03:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.54	9.33	2.79	60.46	09:35
2	TOC	0.0000	0.0000	6.79	9.77	2.98	60.27	09:41

Dilution	Blank Contribution	Method	Calibration
1:10	8.3232 (v409)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**24.6689 ppm (PASS)**	0.0000 ppm	0%	2013/03/24 03:53

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6689	246.6886	204.29	207.06	2.77	60.25	09:38

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/24 04:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.29	10.42	3.13	60.60	09:45

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v408	0.8380	0.8860	0.0000	0.0000	0.0000	2013/03/22 01:19	Gen Chem Lab (Fusion1)
v409	1.6270	0.8350	0.0000	0.0000	0.0000	2013/03/22 19:56	Gen Chem Lab (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v9

Ver Creation: 2013/01/11 23:25

Comment:

Operator: Gen Chem Lab (Fusion1)

Basic Analysis Type: TOC

Calibration curve formula: TOC: y = 7.921x + 8.887

r^2 value: TOC: r^2 = 0.99949

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	11.9430	0.0000		2013/01/11 22:03
0.500 ppm	15.0010	0.5000		2013/01/11 22:17
1.0 ppm	18.3830	1.0000		2013/01/11 22:30
5.0 ppm	47.8020	5.0000		2013/01/11 22:43
10 ppm	81.9700	10.0000		2013/01/11 22:57
25 ppm	204.4970	25.0000		2013/01/11 23:10
50 ppm	407.3940	50.0000		2013/01/11 23:23

Methods

Name: CAS_salt_010711 (TOC)

Version: v3

Ver Creation: 2013/02/04 11:45

Comment:

Operator: Gen Chem Lab (Fusion1)

Parameter	Value	Advanced Parameter	Value
SampleVolume	10.0 mL	NeedleRinseVolume	5.0 ml
Dilution	1:10	VialPrimeVolume	2.0 ml
AcidVolume	0.5 ml	ICSamplePrimeVolume	2.0 ml
ReagentVolume	2.0 ml	ICSpargeRinseVolume	12.0 ml
UVReactorPrerinse	Off	BaselineStabilizeTime	0.70 min
UVReactorPrerinseVolume	5.0	DetectorPressureFlow	150 ml/min
NumberOfUVReactorPrerinses	1	SyringeSpeedWaste	10
ICSpargeTime	1.00 mins	SyringeSpeedAcid	7
DetectorSweepFlow	500 ml/min	SyringeSpeedReagent	7
PreSpargeTime	2.00 mins	SyringeSpeedDIWater	7
SystemFlow	500 ml/min	NDIRPressurization	60 psig

SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	7
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	7
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Gen Chem Lab (Fusion1)	Schedule completed	Schedule completed	2013/03/24 04:21

534117

Work Request # Original (2170) 2320 2444 2480 2520 2566 2602 2652

Tier: II II II V II II V II

Date Analyzed: 3.27.13

Analyst: ab for CFS

Analysis: TOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

2444-1111 high RPD ok b/c CSR MRL

2170 due 3.29

Final Approved by: [signature] Date: 3/29/13

DQREPORT

Analytical Results Summary

ıstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 334179 **Method/Testcode:** 415.1/TOC T

ı Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
302170-001	Carbon, Total Organic	N/A		Water	1.46 mg/L	10 ml	7.3 mg/L	5	0.4	2.5			3/27/13 20:00	N	II
302320-001	Carbon, Total Organic	N/A		Water	1.41 mg/L	10 ml	7.0 mg/L	5	0.4	2.5			3/27/13 20:00	N	II
302444-001	Carbon, Total Organic	N/A		Water	0.65 mg/L	10 ml	0.65 mg/L	1	0.07	0.50			3/27/13 20:00	N	II
302444-002	Carbon, Total Organic	N/A		Water	2.68 mg/L	10 ml	2.68 mg/L	1	0.07	0.50			3/27/13 20:00	N	II
302444-003	Carbon, Total Organic	N/A		Water	2.51 mg/L	10 ml	2.51 mg/L	1	0.07	0.50			3/27/13 20:00	N	II
302444-005	Carbon, Total Organic	N/A		Water	3.01 mg/L	10 ml	3.01 mg/L	1	0.07	0.50			3/27/13 20:00	N	II
302444-006	Carbon, Total Organic	N/A		Water	0.27 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	II
302480-008	Carbon, Total Organic	N/A		Water	3.82 mg/L	10 ml	3.82 mg/L	1	0.07	0.50			3/27/13 20:00	N	V
302526-001	Carbon, Total Organic	N/A		Water	0.55 mg/L	10 ml	0.55 mg/L	1	0.07	0.50			3/27/13 20:00	N	IV
302566-001	Carbon, Total Organic	N/A		Water	1.38 mg/L	10 ml	1.38 mg/L	1	0.07	0.50			3/27/13 20:00	N	II
302566-002	Carbon, Total Organic	N/A		Water	1.61 mg/L	10 ml	1.61 mg/L	1	0.07	0.50			3/27/13 20:00	N	II
302566-003	Carbon, Total Organic	N/A		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	II
302566-004	Carbon, Total Organic	N/A		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	II
302566-005	Carbon, Total Organic	N/A		Water	1.96 mg/L	10 ml	3.9 mg/L	2	0.2	1.0			3/27/13 20:00	N	II
302566-006	Carbon, Total Organic	N/A		Water	1.98 mg/L	10 ml	4.0 mg/L	2	0.2	1.0			3/27/13 20:00	N	II
302566-007	Carbon, Total Organic	N/A		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	II
302566-008	Carbon, Total Organic	N/A		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	II
302566-009	Carbon, Total Organic	N/A		Water	0.96 mg/L	10 ml	0.96 mg/L	1	0.07	0.50			3/27/13 20:00	N	II
302566-010	Carbon, Total Organic	N/A		Water	0.75 mg/L	10 ml	0.75 mg/L	1	0.07	0.50			3/27/13 20:00	N	II
302566-011	Carbon, Total Organic	N/A		Water	2.57 mg/L	10 ml	2.57 mg/L	1	0.07	0.50			3/27/13 20:00	N	II
302602-001	Carbon, Total Organic	N/A		Water	9.81 mg/L	10 ml	19.6 mg/L	2	0.2	1.0			3/27/13 20:00	N	V
302652-001	Carbon, Total Organic	N/A		Water	3.29 mg/L	10 ml	6.6 mg/L	2	0.2	1.0			3/27/13 20:00	N	II
302652-002	Carbon, Total Organic	N/A		Water	2.56 mg/L	10 ml	5.1 mg/L	2	0.2	1.0			3/27/13 20:00	N	II
)1303115-01	Carbon, Total Organic	DUP	K1302170-001	Water	1.37 mg/L	10 ml	6.8 mg/L	5	0.4	2.5		6	3/27/13 20:00	N	II
)1303115-02	Carbon, Total Organic	MS	K1302170-001	Water	26.58 mg/L	10 ml	133 mg/L	5	0.4	2.5	100		3/27/13 20:00	N	II
)1303115-03	Carbon, Total Organic	DUP	K1302320-001	Water	1.28 mg/L	10 ml	6.4 mg/L	5	0.4	2.5		9	3/27/13 20:00	N	II
)1303115-04	Carbon, Total Organic	MS	K1302320-001	Water	26.52 mg/L	10 ml	133 mg/L	5	0.4	2.5	100		3/27/13 20:00	N	II
)1303115-05	Carbon, Total Organic	DUP	K1302444-001	Water	0.51 mg/L	10 ml	0.51 mg/L	1	0.07	0.50		24*	3/27/13 20:00	N	II
)1303115-06	Carbon, Total Organic	MS	K1302444-001	Water	25.01 mg/L	10 ml	25.0 mg/L	1	0.07	0.50	97		3/27/13 20:00	N	II
)1303115-07	Carbon, Total Organic	DUP	K1302444-002	Water	2.54 mg/L	10 ml	2.54 mg/L	1	0.07	0.50		5	3/27/13 20:00	N	II
)1303115-08	Carbon, Total Organic	DUP	K1302444-003	Water	2.48 mg/L	10 ml	2.48 mg/L	1	0.07	0.50		1	3/27/13 20:00	N	II
)1303115-09	Carbon, Total Organic	DUP	K1302444-005	Water	2.96 mg/L	10 ml	2.96 mg/L	1	0.07	0.50		1	3/27/13 20:00	N	II
)1303115-10	Carbon, Total Organic	DUP	K1302444-006	Water	0.21 mg/L	10 ml	0.21 mg/L J	1	0.07	0.50		NC	3/27/13 20:00	N	II
)1303115-11	Carbon, Total Organic	DUP	K1302526-001	Water	0.53 mg/L	10 ml	0.53 mg/L	1	0.07	0.50		NC	3/27/13 20:00	N	IV
)1303115-12	Carbon, Total Organic	DUP	K1302652-001	Water	3.37 mg/L	10 ml	6.7 mg/L	2	0.2	1.0		2	3/27/13 20:00	N	II
)1303115-13	Carbon, Total Organic	MS	K1302652-001	Water	30.55 mg/L	10 ml	61.1 mg/L	2	0.2	1.0	109		3/27/13 20:00	N	II

ıdicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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Analytical Results Summary

nstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 334179 **Method/Testcode:** 415.1/TOC T

b Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
)1303115-14	Carbon, Total Organic	DUP	K1302652-002	Water	2.39 mg/L	10 ml	4.8 mg/L	2	0.2	1.0		7	3/27/13 20:00	N	II
)1303115-15	Carbon, Total Organic	DUP	K1302602-001	Water	9.65 mg/L	10 ml	19.3 mg/L	2	0.2	1.0		2	3/27/13 20:00	N	V
)1303115-16	Carbon, Total Organic	MS	K1302602-001	Water	36.53 mg/L	10 ml	73.1 mg/L	2	0.2	1.0	107		3/27/13 20:00	N	V
)1303115-17	Carbon, Total Organic	DUP	K1302566-001	Water	1.27 mg/L	10 ml	1.27 mg/L	1	0.07	0.50		8	3/27/13 20:00	N	II
)1303115-18	Carbon, Total Organic	MS	K1302566-001	Water	25.74 mg/L	10 ml	25.7 mg/L	1	0.07	0.50	97		3/27/13 20:00	N	II
)1303115-19	Carbon, Total Organic	DUP	K1302566-002	Water	1.47 mg/L	10 ml	1.47 mg/L	1	0.07	0.50		9	3/27/13 20:00	N	II
)1303115-20	Carbon, Total Organic	DUP	K1302566-003	Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	3/27/13 20:00	N	II
)1303115-21	Carbon, Total Organic	DUP	K1302566-004	Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	3/27/13 20:00	N	II
)1303115-22	Carbon, Total Organic	DUP	K1302566-005	Water	1.95 mg/L	10 ml	3.9 mg/L	2	0.2	1.0		<1	3/27/13 20:00	N	II
)1303115-23	Carbon, Total Organic	DUP	K1302566-006	Water	1.95 mg/L	10 ml	3.9 mg/L	2	0.2	1.0		2	3/27/13 20:00	N	II
)1303115-24	Carbon, Total Organic	DUP	K1302566-007	Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	3/27/13 20:00	N	II
)1303115-25	Carbon, Total Organic	DUP	K1302566-008	Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	3/27/13 20:00	N	II
)1303115-26	Carbon, Total Organic	DUP	K1302566-009	Water	0.95 mg/L	10 ml	0.95 mg/L	1	0.07	0.50		2	3/27/13 20:00	N	II
)1303115-27	Carbon, Total Organic	DUP	K1302566-010	Water	0.71 mg/L	10 ml	0.71 mg/L	1	0.07	0.50		6	3/27/13 20:00	N	II
)1303115-28	Carbon, Total Organic	DUP	K1302566-011	Water	2.54 mg/L	10 ml	2.54 mg/L	1	0.07	0.50		1	3/27/13 20:00	N	II
)1303115-29	Carbon, Total Organic	DUP	K1302480-008	Water	3.74 mg/L	10 ml	3.74 mg/L	1	0.07	0.50		2	3/27/13 20:00	N	V
)1303115-30	Carbon, Total Organic	MS	K1302480-008	Water	29.59 mg/L	10 ml	29.6 mg/L	1	0.07	0.50	103		3/27/13 20:00	N	V
)1303115-31	Carbon, Total Organic	MB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-31	Carbon, Total Organic	MB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-31	Carbon, Total Organic	MB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-32	Carbon, Total Organic	MB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-32	Carbon, Total Organic	MB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-32	Carbon, Total Organic	MB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-33	Carbon, Total Organic	LCS		Water	23.00 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	101		3/27/13 20:00	N	V
)1303115-33	Carbon, Total Organic	LCS		Water	23.00 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	101		3/27/13 20:00	N	V
)1303115-33	Carbon, Total Organic	LCS		Water	23.00 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	101		3/27/13 20:00	N	V
)1303115-34	Carbon, Total Organic	LCS		Water	23.05 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	102		3/27/13 20:00	N	V
)1303115-34	Carbon, Total Organic	LCS		Water	23.05 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	102		3/27/13 20:00	N	V
)1303115-34	Carbon, Total Organic	LCS		Water	23.05 mg/L	10 ml	23.0 mg/L	1	0.07	0.50	102		3/27/13 20:00	N	V
)1303115-35	Carbon, Total Organic	CCV		Water	25.12 mg/L	10 ml	25.1 mg/L	1					3/27/13 20:00	N	V
)1303115-35	Carbon, Total Organic	CCV		Water	25.12 mg/L	10 ml	25.1 mg/L	1					3/27/13 20:00	N	V
)1303115-35	Carbon, Total Organic	CCV		Water	25.12 mg/L	10 ml	25.1 mg/L	1					3/27/13 20:00	N	V
)1303115-36	Carbon, Total Organic	CCV		Water	24.84 mg/L	10 ml	24.8 mg/L	1					3/27/13 20:00	N	V
)1303115-36	Carbon, Total Organic	CCV		Water	24.84 mg/L	10 ml	24.8 mg/L	1					3/27/13 20:00	N	V
)1303115-36	Carbon, Total Organic	CCV		Water	24.84 mg/L	10 ml	24.8 mg/L	1					3/27/13 20:00	N	V
)1303115-37	Carbon, Total Organic	CCV		Water	24.85 mg/L	10 ml	24.8 mg/L	1					3/27/13 20:00	N	V

ıdicates Final Result is not yet adjusted for Solids because it has not yet been determined.

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Analytical Results Summary

nstrument Name: K-TOC-01 **Analyst:** CSETHE **Analysis Lot:** 334179 **Method/Testcode:** 9060/TOC-T

b Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
)1303115-37	Carbon, Total Organic	CCV		Water	24.85 mg/L	10 ml	24.8 mg/L	1					3/27/13 20:00	N	V
)1303115-37	Carbon, Total Organic	CCV		Water	24.85 mg/L	10 ml	24.8 mg/L	1					3/27/13 20:00	N	V
)1303115-38	Carbon, Total Organic	CCV		Water	24.61 mg/L	10 ml	24.6 mg/L	1					3/27/13 20:00	N	V
)1303115-38	Carbon, Total Organic	CCV		Water	24.61 mg/L	10 ml	24.6 mg/L	1					3/27/13 20:00	N	V
)1303115-38	Carbon, Total Organic	CCV		Water	24.61 mg/L	10 ml	24.6 mg/L	1					3/27/13 20:00	N	V
)1303115-39	Carbon, Total Organic	CCV		Water	24.34 mg/L	10 ml	24.3 mg/L	1					3/27/13 20:00	N	V
)1303115-39	Carbon, Total Organic	CCV		Water	24.34 mg/L	10 ml	24.3 mg/L	1					3/27/13 20:00	N	V
)1303115-39	Carbon, Total Organic	CCV		Water	24.34 mg/L	10 ml	24.3 mg/L	1					3/27/13 20:00	N	V
)1303115-40	Carbon, Total Organic	CCB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-40	Carbon, Total Organic	CCB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-40	Carbon, Total Organic	CCB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-41	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-41	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-41	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-42	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-42	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-42	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-43	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-43	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-43	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-44	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-44	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V
)1303115-44	Carbon, Total Organic	CCB		Water	0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			3/27/13 20:00	N	V

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ndicates Final Result is not yet adjusted for Solids because it has not yet been determined.

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1		-0.0129	0.0129	0.0129	<0.5	
2	ICV	1		-0.0129	0.0129	0.0129	<0.5	
3	ICB	1		-0.0129	0.0129	0.0129	<0.5	
4	CCV1	1	25.1082	-0.0129	25.1211	25.1211	25.1	
5	CCB1	1	0.0158	-0.0129	0.0287	0.0287	<0.5	
6	MB1	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
7	LCS1	1	22.9840	-0.0129	22.9969	22.9969	23.0	
8	K1302170-001	5	1.4482	-0.0129	1.4611	7.3055	7.31	
9	2170-1D	5	1.3567	-0.0129	1.3696	6.848	6.85	
10	2170-1S	5	26.5651	-0.0129	26.5780	132.89	133	
11	K1302320-001	5	1.3934	-0.0129	1.4063	7.0315	7.03	
12	2320-1D	5	1.2687	-0.0129	1.2816	6.408	6.41	
13	2320-1S	5	26.5110	-0.0129	26.5239	132.6195	133	
14	K1302444-001	1	0.6385	-0.0129	0.6514	0.6514	0.65	
15	2444-1D	1	0.4970	-0.0129	0.5099	0.5099	0.51	
16	2444-1S	1	24.9951	-0.0129	25.0080	25.008	25.0	
17	K1302444-002	1	2.6700	-0.0129	2.6829	2.6829	2.68	
18	2444-2D	1	2.5304	-0.0129	2.5433	2.5433	2.54	
19	CCV2	1	24.8287	-0.0129	24.8416	24.8416	24.8	
20	CCB2	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
21	K1302444-003	1	2.4958	-0.0129	2.5087	2.5087	2.51	
22	2444-3D	1	2.4681	-0.0129	2.4810	2.481	2.48	
23	K1302444-005	1	2.9926	-0.0129	3.0055	3.0055	3.01	
24	2444-5D	1	2.9495	-0.0129	2.9624	2.9624	2.96	
25	K1302444-006	1	0.2606	-0.0129	0.2735	0.2735	<0.5	

ICV = 25.0 ppm (Ref.#11-GEN-05-20A) ICAL Date 1/11/13 ICAL ID#:11-GEN-05-18K

LCS =22.7 ppm APG 4013 Lot #180411 (REF#TOC1-09-L)

CCV = 25.0 ppm (Ref.#11-GEN-05-20A)

Spike: 0.05 ml of 5000 ppm stock ---> 10.0 ml =25.0 x Dilution Factor (Ref.# 11-GEN-05-15E)

		date	time
Analyzed By: [illegible]	Date Analyzed	3/27/2013	20:00:00
Reviewed By: [illegible]	Date Reviewed	3/29/13	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L
26	2444-6D	1	0.1964	-0.0129	0.2093	0.2093	<0.5
27	K1302526-001	1	0.5362	-0.0129	0.5491	0.5491	0.55
28	2526-1D	1	0.5218	-0.0129	0.5347	0.5347	0.53
29	RB	1	0.0058	-0.0129	0.0187	0.0187	<0.5
30	K1302652-001	2	3.2801	-0.0129	3.2930	6.586	6.59
31	2652-1D	2	3.3551	-0.0129	3.3680	6.736	6.74
32	2652-1S	2	30.5358	-0.0129	30.5487	61.0974	61.1
33	K1302652-002	2	2.5511	-0.0129	2.5640	5.128	5.13
34	2652-2D	2	2.3745	-0.0129	2.3874	4.7748	4.77
35	2602-1S	2	36.5187	-0.0129	36.5316	73.0632	73.1
36	RB	1	0.0391	-0.0129	0.0520	0.052	<0.5
37	CCV3	1	24.8355	-0.0129	24.8484	24.8484	24.8
38	CCB3	1	0.0000	-0.0129	0.0129	0.0129	<0.5
39	MB2	1	0.0000	-0.0129	0.0129	0.0129	<0.5
40	LCS2	1	23.0369	-0.0129	23.0498	23.0498	23.0
41	K1302602-001	2	9.7949	-0.0129	9.8078	19.6156	19.6
42	2602-1D	2	9.6397	-0.0129	9.6526	19.3052	19.3
43	2602-1T	2	8.6022	-0.0129	8.6151	17.2302	17.2
44	2602-1Q	2	8.1822	-0.0129	8.1951	16.3902	16.4
45	RB	1	0.0000	-0.0129	0.0129	0.0129	<0.5
46	K1302566-001	1	1.3643	-0.0129	1.3772	1.3772	1.38
47	2566-1D	1	1.2600	-0.0129	1.2729	1.2729	1.27
48	2566-1S	1	25.7268	-0.0129	25.7397	25.7397	25.7
49	K1302566-002	1	1.5939	-0.0129	1.6068	1.6068	1.61
50	2566-2D	1	1.4577	-0.0129	1.4706	1.4706	1.47

Analyzed By:	no for CFS	Date Analyzed	3.27.13
Reviewed By:		Date Reviewed	3/29/13

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	K1302566-003	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
52	2566-3D	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
53	K1302566-004	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
54	2566-4D	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
55	K1302566-005	2	1.9436	-0.0129	1.9565	3.913	3.91	
56	2566-5D	2	1.9353	-0.0129	1.9482	3.8964	3.90	
57	CCV4	1	24.5994	-0.0129	24.6123	24.6123	24.6	
58	CCB4	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
59	K1302566-006	2	1.9709	-0.0129	1.9838	3.9676	3.97	
60	2566-6D	2	1.9342	-0.0129	1.9471	3.8942	3.89	
61	RB	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
62	K1302566-007	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
63	2566-7D	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
64	K1302566-008	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
65	2566-8D	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
66	K1302566-009	1	0.9513	-0.0129	0.9642	0.9642	0.96	
67	2566-9D	1	0.9324	-0.0129	0.9453	0.9453	0.95	
68	K1302566-010	1	0.7410	-0.0129	0.7539	0.7539	0.75	
69	2566-10D	1	0.6996	-0.0129	0.7125	0.7125	0.71	
70	K1302566-011	1	2.5605	-0.0129	2.5734	2.5734	2.57	
71	2566-11D	1	2.5276	-0.0129	2.5405	2.5405	2.54	
72	RB	1	0.0000	-0.0129	0.0129	0.0129	<0.5	
73	K1302480-008	1	3.8068	-0.0129	3.8197	3.8197	3.82	
74	2480-8D	1	3.7282	-0.0129	3.7411	3.7411	3.74	
75	2480-8S	1	29.5788	-0.0129	29.5917	29.5917	29.6	

Analyzed By: [illegible] for CAS	Date Analyzed 3.27.13
Reviewed By: [illegible]	Date Reviewed 3/29/13

COLUMBIA ANALYTICAL SERVICES, INC.

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060

Printout	Sample #	Dil. Factor	Solution Conc. ,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
76	CCV5	1	24.325	-0.0129	24.3382	24.3382	24.3	
77	CCB5	1	0.000	-0.0129	0.0129	0.0129	<0.5	
78		1		-0.0129	0.0129	0.0129	<0.5	
79		1		-0.0129	0.0129	0.0129	<0.5	
80		1		-0.0129	0.0129	0.0129	<0.5	
81		1		-0.0129	0.0129	0.0129	<0.5	
82		1		-0.0129	0.0129	0.0129	<0.5	
83		1		-0.0129	0.0129	0.0129	<0.5	
84		1		-0.0129	0.0129	0.0129	<0.5	
85		1		-0.0129	0.0129	0.0129	<0.5	
86		1		-0.0129	0.0129	0.0129	<0.5	
87	CCV8	1		-0.0129	0.0129	0.0129	<0.5	
88	CCB8	1		-0.0129	0.0129	0.0129	<0.5	
89								
90								
91								
92								
93								
94								
95								
96								
97								
98								
99								
100								

Analyzed By: [illegible]	Date Analyzed 3.27.13
Reviewed By: [illegible]	Date Reviewed 5/27/13

0.016	0.016	0.016	0.016	OBSERVATIONS	17	0.0158
0.000				STD Deviation	0.01911	0
0.000				AVERAGE	0.00621	0
0.012	0.012	0.012	0.012	UCL	0.02531	0.0115
0.000				LCL	-0.01290	0
0.078						ABOVE
0.000						0
0.000				OBSERVATIONS	2	0
0.000				STD Deviation	0.00304	0
0.000				AVERAGE	0.01365	0
0.000				UCL	0.01669	0
0.000				LCL	0.01061	0
0.000						0
0.000						0
0.000				OBSERVATIONS	2	0
0.000				STD Deviation	0.00304	0
0.000				AVERAGE	0.01365	0
				UCL	0.01669	0
				LCL	0.01061	0
						0
						0
				OBSERVATIONS	2	0
				STD Deviation	0.00430	0
				AVERAGE	0.01365	0
						0
						0
						0
						0
						0
						0

Fusion Report - 032713
Wednesday, March 27, 2013 05:47 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2013/03/29 09:03 - Friday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	032713	Engine Version:	1.1.0.189
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Gen Chem Lab (Fusion1) (v2) Gen Chem Lab (Fusion1) (v3) Gen Chem Lab (Fusion1) (v4) Gen Chem Lab (Fusion1) (v5) Gen Chem Lab (Fusion1) (v6) Gen Chem Lab (Fusion1) (v7) Gen Chem Lab (Fusion1) (v8) Gen Chem Lab (Fusion1) (v9) Gen Chem Lab (Fusion1) (v10)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
_	(clean)		Clean	2013/03/27 17:47

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.11	16.05	2.94	49.64	05:19
2	TC Clean	20.61	23.04	2.43	50.83	03:57
3	TC Clean	4.91	7.58	2.67	50.58	03:40
4	TC Clean	2.75	5.55	2.80	51.00	03:41

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
_	(clean)		Clean	2013/03/27 18:08

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.02	3.73	2.71	50.23	05:08

2	TC Clean	6.63	9.44	2.81	51.23	04:00
3	TC Clean	3.36	5.90	2.53	50.98	03:43
4	TC Clean	2.12	5.09	2.97	50.93	03:41

Sample Type: Clean — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
_	(clean)		Clean	2013/03/27 18:30

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	9.32	11.91	2.59	50.28	05:12
2	TC Clean	5.47	8.27	2.80	50.55	03:57
3	TC Clean	2.00	4.89	2.88	50.82	03:40
4	TC Clean	1.88	4.55	2.66	50.57	03:42

Sample Type: Blank (Creating v410) — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
_	(blank)		Reagent/Acid Blank	2013/03/27 18:51

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.82	3.45	2.63	50.28	05:08
2	TC Clean	4.56	7.54	2.98	50.69	03:57
3	TC Clean	2.46	5.31	2.85	50.66	03:42
4	TC Clean	2.26	5.36	3.10	51.10	03:43
5	Reagent Blank	3.34	6.25	2.91	51.28	04:59
6	Acid Blank	0.55	3.44	2.89	49.87	05:20

Sample Type: Check Standard --> CCB — From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.3053 ppm (PASS)**	0.0000 ppm	0%	2013/03/27 19:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

D	TOC	0 ppm	1	0.3053	3.0531	11.30	14.29	2.99	60.19	09:42

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**25.1082 ppm (PASS)**	0.0000 ppm	0%	2013/03/27 19:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1082	251.0819	207.77	210.74	2.97	60.25	09:43

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0158 ppm (PASS)**	0.0000 ppm	0%	2013/03/27 19:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0158	0.1584	9.01	11.88	2.87	60.31	09:40

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/27 20:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.71	10.48	2.77	60.18	09:39

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> LCS From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	2	TOC	22.7000	1:1	[TOC] LCS [22.7 ppm]	0 / infinity (NA / NA)	**22.9840 ppm (PASS)**	0.0000 ppm	0%	2013/03/27 20:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	22.7 ppm	1	22.9840	229.8400	190.95	194.00	3.05	60.57	09:43

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	22.7 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	3	TOC	K1302170-001.08 5x	1.4024 ppm	0.0647 ppm	4.6100%	2013/03/27 20:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4482	14.4820	19.69	22.53	2.83	60.62	09:40
2	TOC	1.3567	13.5668	18.97	21.74	2.78	60.67	09:38

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	4	TOC	K1302170-001.08 ms 5x	26.5651 ppm	0.0000 ppm	0.0000%	2013/03/27 20:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.5651	265.6505	218.65	221.51	2.86	60.41	09:46

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	5	TOC	K1302320-001.08 5x	1.3310 ppm	0.0882 ppm	6.6300%	2013/03/27 21:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3934	13.9341	19.26	22.07	2.81	60.21	09:38
2	TOC	1.2687	12.6869	18.27	20.94	2.67	60.54	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
_	6	TOC	K1302320-001.08 ms 5x	26.5110 ppm	0.0000 ppm	0.0000%	2013/03/27 21:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.5110	265.1102	218.22	221.02	2.80	60.58	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	7	TOC	K1302444-001.07	0.5677 ppm	0.1001 ppm	17.6300%	2013/03/27 21:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6385	6.3847	13.28	15.92	2.65	60.26	09:37
2	TOC	0.4970	4.9695	12.16	14.87	2.72	60.54	09:36

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	8	TOC	K1302444-001.07 ms	24.9951 ppm	0.0000 ppm	0.0000%	2013/03/27 22:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	24.9951	249.9508	206.21	209.08	2.87	60.15	09:42

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	9	TOC	K1302444-002.07	2.6002 ppm	0.0987 ppm	3.8000%	2013/03/27 22:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6700	26.7000	29.37	32.25	2.88	60.60	09:39
2	TOC	2.5304	25.3037	28.26	31.17	2.90	60.65	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**24.8287 ppm (PASS)**	0.0000 ppm	0%	2013/03/27 22:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8287	248.2869	205.56	208.16	2.60	60.37	09:46

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/27 23:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.28	10.97	2.70	60.48	09:43

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	10	TOC	K1302444-003.08	2.4820 ppm	0.0195 ppm	0.7900%	2013/03/27 23:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4958	24.9578	27.99	30.85	2.86	60.53	09:40
2	TOC	2.4681	24.6813	27.77	30.66	2.89	60.13	09:36

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	11	TOC	K1302444-005.07	2.9710 ppm	0.0304 ppm	1.0200%	2013/03/27 23:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9926	29.9255	31.92	34.73	2.80	60.59	09:39
2	TOC	2.9495	29.4950	31.58	34.46	2.88	60.58	09:39

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	12	TOC	K1302444-006.07	0.2285 ppm	0.0454 ppm	19.8900%	2013/03/28 00:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2606	2.6062	10.28	13.11	2.82	60.60	09:41
2	TOC	0.1964	1.9636	9.78	12.64	2.86	60.11	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	13	TOC	K1302526-001.03	0.5290 ppm	0.0102 ppm	1.9200%	2013/03/28 00:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5362	5.3621	12.47	15.31	2.85	60.60	09:39
2	TOC	0.5218	5.2182	12.35	15.12	2.76	60.18	09:33

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	14	TOC	RB	0.0058 ppm	0.0082 ppm	141.4200%	2013/03/28 01:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0115	0.1154	8.31	11.15	2.84	60.54	09:38
2	TOC	0.0000	0.0000	6.90	9.86	2.95	60.26	09:38

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	15	TOC	K1302652-001.08 2x	3.3176 ppm	0.0530 ppm	1.6000%	2013/03/28 01:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2801	32.8014	34.20	37.10	2.90	60.34	09:37
2	TOC	3.3551	33.5513	34.80	37.68	2.89	60.42	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	16	TOC	K1302652-001.08 ms 2x	30.5358 ppm	0.0000 ppm	0.0000%	2013/03/28 02:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	30.5358	305.3582	250.10	252.90	2.80	60.34	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711	CAS_salt_010711

(v3) (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	17	TOC	K1302652-002.08 2x	2.4628 ppm	0.1249 ppm	5.0700%	2013/03/28 02:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5511	25.5108	28.43	31.33	2.90	60.34	09:33
2	TOC	2.3745	23.7446	27.03	29.99	2.96	60.29	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	18	TOC	K1302602-001.05 ms 2x	36.5187 ppm	0.0000 ppm	0.0000%	2013/03/28 02:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	36.5187	365.1867	297.49	300.32	2.83	60.16	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	19	TOC	RB	0.0391 ppm	0.0553 ppm	141.4200%	2013/03/28 02:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0782	0.7820	8.84	11.55	2.71	60.24	09:36
2	TOC	0.0000	0.0000	7.81	10.59	2.79	60.49	09:35

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**24.8355 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 03:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8355	248.3550	205.61	208.53	2.92	60.25	09:43

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 03:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.80	10.75	2.95	60.20	09:42

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/28 03:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.01	9.95	2.94	60.43	09:37

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> LCS From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	2	TOC	22.7000	1:1	[TOC] LCS [22.7 ppm]	0 / infinity (NA / NA)	**23.0369 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 04:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	22.7 ppm	1	23.0369	230.3690	191.36	194.12	2.75	60.45	09:41

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	22.7 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	21	TOC	K1302602-001.05 2x	9.0548 ppm	0.7866 ppm	8.6900%	2013/03/28 04:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	9.7949	97.9486	85.81	88.49	2.68	60.28	09:36
2	TOC	9.6397	96.3971	84.58	87.45	2.87	57.18	09:36
3	TOC	8.6022	86.0223	76.36	79.30	2.94	51.54	10:15
4	TOC	8.1822	81.8221	73.03	75.87	2.84	44.32	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	22	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/28 05:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.12	9.92	2.79	48.60	10:27
2	TOC	0.0000	0.0000	7.49	10.39	2.90	54.17	10:01

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	23	TOC	K1302566-001.10	1.3121 ppm	0.0737 ppm	5.6200%	2013/03/28 05:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3643	13.6425	19.03	21.82	2.79	54.77	09:48
2	TOC	1.2600	12.5997	18.20	21.11	2.90	54.57	09:49

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	24	TOC	K1302566-001.10 ms	25.7268 ppm	0.0000 ppm	0.0000%	2013/03/28 06:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.7268	257.2679	212.01	214.69	2.69	56.21	09:55

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	25	TOC	K1302566-002.10	1.5258 ppm	0.0963 ppm	6.3100%	2013/03/28 06:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5939	15.9389	20.85	23.62	2.78	55.93	09:49
2	TOC	1.4577	14.5767	19.77	22.74	2.98	56.86	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.90	9.68	2.78	56.53	09:46
2	TOC	0.0000	0.0000	6.92	9.70	2.78	56.47	09:49

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	27	TOC	K1302566-004.10	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/28 07:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.90	9.68	2.77	56.47	09:43
2	TOC	0.0000	0.0000	6.89	9.72	2.82	58.08	09:48

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	28	TOC	K1302566-005.10 2x	1.9394 ppm	0.0059 ppm	0.3000%	2013/03/28 07:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9436	19.4359	23.62	26.66	3.04	58.40	09:47
2	TOC	1.9353	19.3526	23.55	26.35	2.80	58.58	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**24.5994 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 08:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5994	245.9943	203.74	206.59	2.85	58.33	09:50

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 08:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.92	10.81	2.89	58.63	09:49

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	29	TOC	K1302566-006.10 2x	1.9526 ppm	0.0259 ppm	1.3300%	2013/03/28 08:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9709	19.7086	23.83	26.74	2.90	58.44	09:38
2	TOC	1.9342	19.3425	23.54	26.56	3.02	58.76	09:42

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	30	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/28 08:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.44	9.99	2.55	58.91	09:42
2	TOC	0.0000	0.0000	6.51	9.34	2.83	59.04	09:44

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	31	TOC	K1302566-007.10	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/28 09:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.66	9.48	2.81	58.78	09:40
2	TOC	0.0000	0.0000	6.70	9.28	2.58	58.90	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

_	32	TOC	K1302566-008.10	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/28 09:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.64	9.32	2.68	58.83	09:41
2	TOC	0.0000	0.0000	6.48	9.25	2.77	58.72	09:41

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	33	TOC	K1302566-009.10	0.9418 ppm	0.0134 ppm	1.4200%	2013/03/28 10:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9513	9.5131	15.76	18.44	2.69	58.71	09:39
2	TOC	0.9324	9.3237	15.61	18.44	2.83	58.80	09:40

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	34	TOC	K1302566-010.10	0.7203 ppm	0.0293 ppm	4.0700%	2013/03/28 10:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7410	7.4098	14.09	16.75	2.66	58.73	09:44
2	TOC	0.6996	6.9957	13.76	16.61	2.85	58.66	09:41

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	35	TOC	K1302566-011.10	2.5441 ppm	0.0233 ppm	0.9200%	2013/03/28 11:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5605	25.6055	28.50	31.31	2.81	58.57	09:40
2	TOC	2.5276	25.2760	28.24	31.12	2.88	58.78	09:41

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	36	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/28 11:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.05	9.74	2.68	58.66	09:45
2	TOC	0.0000	0.0000	6.59	9.27	2.68	58.29	09:42

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	37	TOC	K1302480-008.28	3.7675 ppm	0.0556 ppm	1.4800%	2013/03/28 11:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8068	38.0683	38.38	41.16	2.79	58.44	09:42
2	TOC	3.7282	37.2818	37.75	40.47	2.72	58.21	09:41

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	38	TOC	K1302480-008.28 ms	29.5788 ppm	0.0000 ppm	0.0000%	2013/03/28 12:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.5788	295.7876	242.52	245.46	2.94	58.58	09:53

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**24.3253 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 12:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3253	243.2535	201.57	204.48	2.91	57.94	09:49

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 12:53

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

D	TOC	0 ppm	1	0.0000	0.0000	7.97	10.88	2.91	57.74	09:46

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2013/03/28 13:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.74	9.51	2.77	58.00	09:55

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> LCS From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	2	TOC	22.7000	1:1	[TOC] LCS [22.7 ppm]	0 / infinity (NA / NA)	**22.5261 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 13:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	22.7 ppm	1	22.5261	225.2611	187.32	190.22	2.90	57.87	09:48

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	22.7 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	40	TOC	K1302480-015.31	2.6655 ppm	0.1718 ppm	6.4500%	2013/03/28 13:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7870	27.8703	30.30	32.99	2.70	57.55	09:46
2	TOC	2.5440	25.4401	28.37	31.24	2.87	56.76	09:45

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	41	TOC	K1302480-016.31	1.7252 ppm	0.3448 ppm	19.9800%	2013/03/28 14:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9690	19.6896	23.82	26.73	2.91	53.20	09:48
2	TOC	1.4814	14.8141	19.96	23.02	3.06	35.80	10:16

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	42	TOC	K1302480-023.28	0.3535 ppm	0.0163 ppm	4.6200%	2013/03/28 14:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3650	3.6503	11.11	14.00	2.89	22.69	10:27
2	TOC	0.3419	3.4192	10.93	13.78	2.85	23.05	10:22

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	43	TOC	K1302480-024.28	1.5038 ppm	0.0195 ppm	1.2900%	2013/03/28 14:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5175	15.1751	20.24	23.07	2.82	23.54	10:29
2	TOC	1.4900	14.8999	20.02	22.95	2.92	23.95	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	44	TOC	K1302480-026.28	0.5661 ppm	0.0243 ppm	4.2900%	2013/03/28 15:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5833	5.8330	12.84	15.69	2.85	24.40	10:26
2	TOC	0.5490	5.4897	12.57	15.60	3.03	24.47	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	45	TOC	K1302480-027.28	0.7717 ppm	0.0279 ppm	3.6100%	2013/03/28 15:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7520	7.5197	14.18	17.05	2.87	23.89	10:26
2	TOC	0.7914	7.9135	14.49	17.44	2.95	24.89	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711	CAS_salt_010711

(v3) (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	46	TOC	K1302510-001.12	0.1008 ppm	0.0391 ppm	38.7900%	2013/03/28 16:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0731	0.7315	8.80	11.75	2.95	24.85	10:26
2	TOC	0.1284	1.2844	9.24	11.86	2.62	24.76	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	47	TOC	K1302510-001.12 ms	16.8539 ppm	0.0000 ppm	0.0000%	2013/03/28 16:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.8539	168.5395	141.72	144.58	2.86	24.66	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	**16.1206 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 17:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	16.1206	161.2059	136.58	139.63	3.05	24.29	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
_	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	**0.0000 ppm (PASS)**	0.0000 ppm	0%	2013/03/28 17:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.00	8.30	3.31	23.63	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)	0 ppmC

Sample Type: Sample

From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	48	TOC	K1302510-002.12	0.1297 ppm	0.0095 ppm	7.3000%	2013/03/28 17:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1230	1.2302	9.20	11.97	2.78	23.09	10:27
2	TOC	0.1364	1.3640	9.30	12.20	2.90	25.32	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	49	TOC	K1302510-003.12	1.1659 ppm	0.1019 ppm	8.7400%	2013/03/28 17:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2380	12.3801	18.03	20.77	2.75	26.19	10:24
2	TOC	1.0938	10.9384	16.88	19.94	3.06	24.39	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	8.2206 (v410)	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
_	50	TOC	K1302510-004.12	NaN	NaN	NaN%	2013/03/28 18:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

Dilution	Method	Calibration
1:10	CAS_salt_010711 (v3)	CAS_salt_010711 (v9)

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v409	1.6270	0.8350	0.0000	0.0000	0.0000	2013/03/22 19:56	Gen Chem Lab (Fusion1)
v410	1.1130	0.5500	0.0000	0.0000	0.0000	2013/03/27 19:24	Gen Chem Lab (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v9	Calibration curve formula:	TOC: y = 7.921x + 8.887
Ver Creation:	2013/01/11 23:25	r^2 value:	TOC: r^2 = 0.99949
Comment:			
Operator:	Gen Chem Lab (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	11.9430	0.0000		2013/01/11 22:03
0.500 ppm	15.0010	0.5000		2013/01/11 22:17
1.0 ppm	18.3830	1.0000		2013/01/11 22:30
5.0 ppm	47.8020	5.0000		2013/01/11 22:43
10 ppm	81.9700	10.0000		2013/01/11 22:57
25 ppm	204.4970	25.0000		2013/01/11 23:10
50 ppm	407.3940	50.0000		2013/01/11 23:23

Methods

Name: CAS_salt_010711 (TOC)

Version:	v3	Operator:	Gen Chem Lab (Fusion1)
Ver Creation:	2013/02/04 11:45		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	7
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	7
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min

SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Gen Chem Lab (Fusion1)	Schedule completed	Schedule completed	2013/03/28 18:36

TOC: 334179
DOC ~~334180~~

Schedule: 032713

Version: 10
Instrument: Fusion1
Last Saved by: Gen Chem Lab (Fusion1)
Last Saved on: 2013/03/27 20:16 - Wednesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Done
(Clean)	Clean	Clean		1	True	Done
(Clean)	Clean	Clean		1	True	Done
(Blank)	Blank	Reagent/Acid Blank		1	True	Done
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Done
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Done
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Done
2	Check Standard	[TOC] LCS [22.7 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Pending
3	Sample	K1302170-001.08 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1302170-001.08 ms 5x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
5	Sample	K1302320-001.08 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K1302320-001.08 ms 5x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
7	Sample	K1302444-001.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1302444-001.07 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
9	Sample	K1302444-002.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1302444-003.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1302444-005.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1302444-006.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1302526-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1302652-001.08 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1302652-001.08 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
17	Sample	K1302652-002.08 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1302602-001.05 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
19	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Check Standard	[TOC] LCS [22.7 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1302602-001.05 2x	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
22	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1302566-001.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1302566-001.10 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
25	Sample	K1302566-002.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1302566-003.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1302566-004.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1302566-005.10 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1302566-006.10 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1302566-007.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1302566-008.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1302566-009.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1302566-010.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1302566-011.10	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1302480-008.28	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1302480-008.28 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 032713

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Check Standard	[TOC] LCS [22.7 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1302480-015.31	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1302480-016.31	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1302480-023.28	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1302480-024.28	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1302480-026.28	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1302480-027.28	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1302510-001.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1302510-001.12 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1302510-002.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1302510-003.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1302510-004.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1302510-005.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1302510-006.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1302510-007.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1302510-008.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1302510-009.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1302551-001.12 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1302551-001.12 ms 2x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Check Standard	[TOC] LCS [22.7 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1302682-008.19	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1302682-008.19 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
61	Sample	K1302682-009.19 2x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1302499-001.05 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample	K1302499-001.05 ms DOC	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
64	Sample	k1302322-001.04 DOC	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
65	Sample	k1302322-002.04 DOC	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
66	Sample	k1302322-002.04 ms/msd DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	k1302322-003.04 DOC	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
68	Sample	k1302322-004.04 DOC	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
69	Sample	k1302322-005.04 DOC	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
70	Sample	k1302322-006.04 DOC	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
71	Sample	k1302322-007.04 DOC	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
72	Sample	k1302322-008.04 DOC	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

335110

Work Request # Original (2712) 2526 2993

Tier: IV IV IV

Date Analyzed: 4/4/13

Analyst: MK

Analysis: SAL

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

Final Approved by: BDK Date: 4/4/13

DQREPORT

Analytical Results Summary

Instrument Name: K-CondMeter-01 **Analyst:** MKANALY **Analysis Lot:** 335110 **Method/Testcode:** SM 2520 B/Salinity

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1302526-001	Salinity	N/A		Water	19.60 g/L	10 mL	19.6 g/Kg	1		2.0			4/4/13 13:20:00	N	IV
K1302526-002	Salinity	N/A		Water	19.20 g/L	10 mL	19.2 g/Kg	1		2.0			4/4/13 13:20:00	N	IV
K1302526-003	Salinity	N/A		Water	11.10 g/L	10 mL	11.1 g/Kg	1		2.0			4/4/13 13:20:00	Y	IV
K1302526-004	Salinity	N/A		Water	23.60 g/L	10 mL	23.6 g/Kg	1		2.0			4/4/13 13:20:00	N	IV
K1302526-005	Salinity	N/A		Water	23.70 g/L	10 mL	23.7 g/Kg	1		2.0			4/4/13 13:20:00	N	IV
K1302526-006	Salinity	N/A		Water	22.30 g/L	10 mL	22.3 g/Kg	1		2.0			4/4/13 13:20:00	N	IV
K1302526-007	Salinity	N/A		Water	0.30 g/L	10 mL	2.0 g/Kg U	1		2.0			4/4/13 13:20:00	N	IV
K1302526-008	Salinity	N/A		Water	0.50 g/L	10 mL	2.0 g/Kg U	1		2.0			4/4/13 13:20:00	N	IV
K1302712-001	Salinity	N/A		Water	0.30 g/L	10 mL	2.0 g/Kg U	1		2.0			4/4/13 13:20:00	N	I
K1302993-001	Salinity	N/A		Water	0.50 g/L	10 mL	2.0 g/Kg U	1		2.0			4/4/13 13:20:00	N	I
KQ1303338-01	Salinity	MB		Water	0.00 g/L	10 mL	2.0 g/Kg U	1		2.0			4/4/13 13:20:00	N	IV
KQ1303338-02	Salinity	LCS		Water	16.80 g/L	10 mL	16.8 g/Kg	1		2.0	96		4/4/13 13:20:00	N	IV
KQ1303338-03	Salinity	DUP	K1302526-003	Water	10.90 g/L	10 mL	10.9 g/Kg	1		2.0		2	4/4/13 13:20:00	N	IV

BDK
4/4/13

98

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request: _____ Method: SM 2520B

Analysis For: Salinity

Sample #	Reading g/kg		Sample #	Reading g/kg	
	Meter Value	Reported Value		Meter Value	Reported Value
MB	0	0			
STD	34.6	34.6			
LCS	16.8	16.8			
K1302712-001	0.3	0.3			
K1302526-001	19.6	19.6			
K1302526-002	19.2	19.2			
K1302526-003	11.1	11.1			
K1302526-003D	10.9	10.9			
K1302526-004	23.6	23.6			
K1302526-005	23.7	23.7			
K1302526-006	22.3	22.3			
K1302526-007	0.3	0.3			
K1302526-008	0.5	0.5			
K1302993-001	0.5	0.5			
MB	0	0			
STD	34.2	34.2			
		0			
		0			
		0			
		0			
		0			
		0			

STD = 35.0 g/kg ID#= COND/1-37-m %RE 98.8571429

LCS= 17.5 g/kg ID#= COND/1-37-L %RE 96

Water Bath ID# K-WB-01 Thermometer ID# L82605

CELL CONSTANT = 1.104

K-COND METER #1

Analyst: MK		Date:	4/4/2013 13:20
Reviewed By: BDC		Date:	4/4/13

4-4-13 SAL

Metals

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Now part of the ALS Group

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: Hart Crowser, Incorporated
Project Name: Sitcum Waterway
Project No.: 17472-01

Service Request: K1302526

Sample Name:	Lab Code:
MW-10	K1302526-001DISS
MW-7	K1302526-002DISS
MW-5	K1302526-003DISS
MW-5D	K1302526-003DISSD
MW-5S	K1302526-003DISSS
MW-14	K1302526-004DISS
MW-1400	K1302526-005DISS
MW-12	K1302526-006DISS
MW-1a	K1302526-007DISS
MW-1	K1302526-008DISS
Method Blank	K1302526-MB

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project No.:	17472-01	**Date Collected:**	03/19/13
Project Name:	Sitcum Waterway	**Date Received:**	03/21/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-10 **Lab Code:** K1302526-001DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	N
Copper	200.8	0.1	1.0	04/03/13	04/05/13	0.4		
Lead	200.8	0.02	1.0	04/03/13	04/05/13	0.02	U	
Nickel	200.8	0.2	1.0	04/03/13	04/05/13	1.5		N*
Zinc	200.8	0.5	1.0	04/03/13	04/05/13	1.0		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project No.:	17472-01	**Date Collected:**	03/19/13
Project Name:	Sitcum Waterway	**Date Received:**	03/21/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-7 **Lab Code:** K1302526-002DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	N
Copper	200.8	0.1	1.0	04/03/13	04/05/13	0.2		
Lead	200.8	0.02	1.0	04/03/13	04/05/13	0.02	U	
Nickel	200.8	0.2	1.0	04/03/13	04/05/13	0.4		N*
Zinc	200.8	0.5	1.0	04/03/13	04/05/13	0.9		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project No.:	17472-01	**Date Collected:**	03/19/13
Project Name:	Sitcum Waterway	**Date Received:**	03/21/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-5 **Lab Code:** K1302526-003DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	N
Copper	200.8	0.1	1.0	04/03/13	04/05/13	0.1		
Lead	200.8	0.02	1.0	04/03/13	04/05/13	0.02	U	
Nickel	200.8	0.2	1.0	04/03/13	04/05/13	1.1		N*
Zinc	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project No.:	17472-01	**Date Collected:**	03/19/13
Project Name:	Sitcum Waterway	**Date Received:**	03/21/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-14 **Lab Code:** K1302526-004DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	N
Copper	200.8	0.1	1.0	04/03/13	04/05/13	0.2		
Lead	200.8	0.02	1.0	04/03/13	04/05/13	0.02	U	
Nickel	200.8	0.2	1.0	04/03/13	04/05/13	0.9		N*
Zinc	200.8	0.5	1.0	04/03/13	04/05/13	1.4		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project No.:	17472-01	**Date Collected:**	03/19/13
Project Name:	Sitcum Waterway	**Date Received:**	03/21/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-1400 **Lab Code:** K1302526-005DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	N
Copper	200.8	0.1	1.0	04/03/13	04/05/13	0.3		
Lead	200.8	0.02	1.0	04/03/13	04/05/13	0.02	U	
Nickel	200.8	0.2	1.0	04/03/13	04/05/13	1.0		N*
Zinc	200.8	0.5	1.0	04/03/13	04/05/13	2.3		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project No.:	17472-01	**Date Collected:**	03/19/13
Project Name:	Sitcum Waterway	**Date Received:**	03/21/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-12 **Lab Code:** K1302526-006DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	N
Copper	200.8	0.1	1.0	04/03/13	04/05/13	0.1		
Lead	200.8	0.02	1.0	04/03/13	04/05/13	0.02	U	
Nickel	200.8	0.2	1.0	04/03/13	04/05/13	0.8		N*
Zinc	200.8	0.5	1.0	04/03/13	04/05/13	0.7		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project No.:	17472-01	**Date Collected:**	03/19/13
Project Name:	Sitcum Waterway	**Date Received:**	03/21/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-1a **Lab Code:** K1302526-007DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	N
Copper	200.8	0.1	1.0	04/03/13	04/05/13	0.2		
Lead	200.8	0.02	1.0	04/03/13	04/05/13	0.04		
Nickel	200.8	0.2	1.0	04/03/13	04/05/13	0.9		N*
Zinc	200.8	0.5	1.0	04/03/13	04/05/13	0.7		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1302526
Project No.:	17472-01	**Date Collected:**	03/19/13
Project Name:	Sitcum Waterway	**Date Received:**	03/21/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-1 **Lab Code:** K1302526-008DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	N
Copper	200.8	0.1	1.0	04/03/13	04/05/13	0.2		
Lead	200.8	0.02	1.0	04/03/13	04/05/13	0.02	U	
Nickel	200.8	0.2	1.0	04/03/13	04/05/13	0.7		N*
Zinc	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Hart Crowser, Incorporated
Service Request: K1302526
Project No.: 17472-01
Date Collected:
Project Name: Sitcum Waterway
Date Received:
Matrix: WATER
Units: ug/L
Basis: NA

Sample Name: Method Blank
Lab Code: K1302526-MB

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	N
Copper	200.8	0.1	1.0	04/03/13	04/05/13	0.1	U	
Lead	200.8	0.02	1.0	04/03/13	04/05/13	0.02	U	
Nickel	200.8	0.2	1.0	04/03/13	04/05/13	0.2	U	N*
Zinc	200.8	0.5	1.0	04/03/13	04/05/13	0.5	U	

Comments:

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Hart Crowser, Incorporated Service Request: K1302526

Project No.: 17472-01

Project Name: Sitcum Waterway

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Arsenic	25.0	25.9	104	25.0	24.4	98	24.8	99	200.8
Copper	12.5	13.0	104	25.0	24.5	98	26.2	105	200.8
Lead	25.0	25.3	101	25.0	25.2	101	26.5	106	200.8
Nickel	25.0	23.9	96	25.0	25.4	102	24.8	99	200.8
Zinc	25.0	26.0	104	25.0	24.3	97	25.7	103	200.8

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Hart Crowser, Incorporated Service Request: K1302526

Project No.: 17472-01

Project Name: Sitcum Waterway

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Arsenic				25.0	25.5	102			200.8
Copper				25.0	26.6	106			200.8
Lead				25.0	26.8	107			200.8
Nickel				25.0	25.1	100			200.8
Zinc				25.0	25.0	100			200.8

Metals

- 2b -
CRDL STANDARD FOR AA AND ICP

Client: Hart Crowser, Incorporated Service Request: K1302526

Project No.: 17472-01

Project Name: Sitcum Waterway

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Arsenic				5.00	4.64	93		
Copper				1.00	0.96	96		
Lead				0.200	0.199	100		
Nickel				2.00	2.16	108		
Zinc				5.0	4.5	90		

Metals

- 3 -

BLANKS

Client: Hart Crowser, Incorporated Service Request: K1302526

Project No.: 17472-01

Project Name: Sitcum Waterway

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Arsenic	5.00	U	5.00	U	5.00	U	5.00	U	200.8
Copper	1.00	U	1.00	U	1.00	U	1.00	U	200.8
Lead	0.200	U	0.200	U	0.200	U	0.200	U	200.8
Nickel	2.00	U	2.00	U	2.00	U	2.00	U	200.8
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	200.8

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Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Hart Crowser, Incorporated
Service Request: K1302526
Project No.: 17472-01
Units: UG/L
Project Name: Sitcum Waterway
Basis: NA
Matrix: WATER

Sample Name: MW-5S
Lab Code: K1302526-003DISSS

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Arsenic	50 - 147	0.5	U	0.5	U	2.00	0.0	N	200.8
Copper	50 - 120	2.1		0.1		2.00	100.0		200.8
Lead	55 - 118	1.76		0.02	U	2.00	88.0		200.8
Nickel	60 - 126	2.2		1.1		2.00	55.0	N	200.8
Zinc	50 - 133	1.7		0.5	U	2.00	85.0		200.8

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Hart Crowser, Incorporated **Service Request:** K1302526

Project No.: 17472-01 **Units:** UG/L

Project Name: Sitcum Waterway **Basis:** NA

Matrix: WATER

Sample Name: MW-5D **Lab Code:** K1302526-003DISSD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Arsenic		0.5	U	0.5	U			200.8
Copper		0.1		0.1	U	200.0		200.8
Lead		0.02	U	0.02	U			200.8
Nickel		1.1		0.4		93.3	*	200.8
Zinc		0.5	U	0.5	U			200.8

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: Hart Crowser, Incorporated **Service Request:** K1302526

Project No.: 17472-01

Project Name: Sitcum Waterway

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C	Solid (mg/kg) Limits	Solid (mg/kg) %R
Arsenic	2	2.0	100.0					
Copper	2	1.9	95.0					
Lead	2	1.94	97.0					
Nickel	2	2.0	100.0					
Zinc	2	2.0	100.0					

Metals

- 10 -

DETECTION LIMITS

Client: Hart Crowser, Incorporated **Service Request:** K1302526

Project No.: 17472-01

Project Name: Sitcum Waterway

ICP/ICP-MS ID #: K-ICP-MS-02

GFAA ID #: **AA ID #:**

Analyte	Isotope	Back-ground	MRL ug/L	MDL ug/L	M
Arsenic	75		5.0	5.0	MS
Copper	65		1.0	1.0	MS
Lead	208		0.20	0.20	MS
Nickel	60		2.0	2.0	MS
Zinc	66		5.0	5.0	MS

Comments:

Metals
-12-
ICP LINEAR RANGES (QUARTERLY)

Client: Hart Crowser, Incorporated **Service Request:** K1302526

Project No.: 17472-01

Project Name: Sitcum Waterway

ICP ID Number: K-ICP-MS-02

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Arsenic	15.000	900	200.8
Copper	15.000	900	200.8
Lead	15.000	900	200.8
Nickel	15.000	900	200.8
Zinc	15.000	900	200.8

Comments:

Metals
-13-
PREPARATION LOG

Client: Hart Crowser, Incorporated **Service Request:** K1302526

Project No.: 17472-01

Project Name: Sitcum Waterway

Method: MS

Sample ID	Preparation Date	Initial Volume	Final Volume (mL)
K1302526-001DISS	04/03/13	1,000.0	100.0
K1302526-002DISS	04/03/13	1,000.0	100.0
K1302526-003DISS	04/03/13	1,000.0	100.0
K1302526-003DISSD	04/03/13	1,000.0	100.0
K1302526-003DISSS	04/03/13	1,000.0	100.0
K1302526-004DISS	04/03/13	1,000.0	100.0
K1302526-005DISS	04/03/13	1,000.0	100.0
K1302526-006DISS	04/03/13	1,000.0	100.0
K1302526-007DISS	04/03/13	1,000.0	100.0
K1302526-008DISS	04/03/13	1,000.0	100.0
K1302526-MB	04/03/13	1,000.0	100.0
LCSW	04/03/13	1,000.0	100.0

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Metals
- 14 -
ANALYSIS RUN LOG

Client: Hart Crowser, Incorporated Service Request: K1302526

Project No.: 17472-01 Run Number: 040513AMS02

Project Name: Sitcum Waterway

Instrument ID Number: K-ICP-MS-02 Method: MS

Start Date: 04/05/13 End Date: 04/05/13

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.0	13:04				X							X		X				X							X	
Calibration Std.	1.0	13:08				X							X		X				X							X	
ZZZZZZ	1.0	13:12																									
ICV1	1.0	13:18				X							X		X				X							X	
CCV1	1.0	13:21				X							X		X				X							X	
ICB1	1.0	13:25				X							X		X				X							X	
CCB1	1.0	13:29				X							X		X				X							X	
LLICV1	1.0	13:32				X							X		X				X							X	
ICS-A1	1.0	13:37				X							X		X				X							X	
ICS-AB1	1.0	13:40				X							X		X				X							X	
K1302526-MB	1.0	13:48				X							X		X				X							X	
LCSW	1.0	13:52				X							X		X				X							X	
ZZZZZZ	1.0	13:56																									
ZZZZZZ	5.0	13:59																									
ZZZZZZ	1.0	14:03																									
ZZZZZZ	1.0	14:20																									
ZZZZZZ	1.0	14:31																									
K1302526-003DISS	1.0	14:34				X							X		X				X							X	
K1302526-003DISSD	1.0	14:38				X							X		X				X							X	
K1302526-003DISSS	1.0	14:42				X							X		X				X							X	
CCV2	1.0	14:46				X							X		X				X							X	
CCB2	1.0	14:50				X							X		X				X							X	
ZZZZZZ	1.0	14:53																									
K1302526-001DISS	1.0	14:57				X							X		X				X							X	
K1302526-002DISS	1.0	15:01				X							X		X				X							X	
K1302526-004DISS	1.0	15:04				X							X		X				X							X	
K1302526-005DISS	1.0	15:08				X							X		X				X							X	
K1302526-006DISS	1.0	15:12				X							X		X				X							X	
K1302526-007DISS	1.0	15:15				X							X		X				X							X	
K1302526-008DISS	1.0	15:19				X							X		X				X							X	
CCV3	1.0	15:23				X							X		X				X							X	
CCB3	1.0	15:26				X							X		X				X							X	

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

Metals

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: COLUMBIA ANALYTICAL SERVICES, INC Contract: 17472-01

Lab Code: CASK Case No.: _____ NRAS No.: _____ SDG NO.: K1302526

ICP-MS Instrument ID: K-ICP-MS-02 Start Date: 04/05/2013 End Date: 04/05/2013

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Ga_71	Q	Element In_115	Q	Element Lu_175	Q	Element	Q	Element	Q	Element	Q
Calibration	Calibration	1304	100		100		100							
Calibration Std.	Calibration Std.	1308	92		96		94							
ZZZZZZ	ZZZZZZ	1312												
ICV1	ICV1	1318	89		97		96							
CCV1	CCV1	1321	91		96		96							
ICB1	ICB1	1325	93		99		98							
CCB1	CCB1	1329	91		97		99							
LLICV1	LLICV1	1332	92		98		100							
ICS-A1	ICSA	1337	82		90		92							
ICS-AB1	ICSAB	1340	86		92		92							
K1302526-MB	Method Blank	1348	102		108		113							
LCSW	LCSW	1352	102		109		111							
ZZZZZZ	ZZZZZZ	1356												
ZZZZZZ	ZZZZZZ	1359												
ZZZZZZ	ZZZZZZ	1403												
ZZZZZZ	ZZZZZZ	1420												
ZZZZZZ	ZZZZZZ	1431												
K1302526-003DISS	MW-5	1434	100		104		105							
K1302526-003DISS	MW-5D	1438	100		105		105							
K1302526-003DISS	MW-5S	1442	100		108		106							
CCV2	CCV2	1446	108		116		107							
CCB2	CCB2	1450	108		114		110							
ZZZZZZ	ZZZZZZ	1453												
K1302526-001DISS	MW-10	1457	95		100		108							
K1302526-002DISS	MW-7	1501	94		98		102							
K1302526-004DISS	MW-14	1504	85		85		82							
K1302526-005DISS	MW-1400	1508	85		84		82							
K1302526-006DISS	MW-12	1512	93		95		99							
K1302526-007DISS	MW-1a	1515	110		114		112							
K1302526-008DISS	MW-1	1519	110		113		111							
CCV3	CCV3	1523	106		111		106							
CCB3	CCB3	1526	109		112		109							

Columbia Analytical Services™ **Preparation Information Benchsheet**

Prep Run: 180030
Team: Metals
Analyst: Anna Cheatley
Prep Workflow: MetDigRedPptAq
Prep Method: EPA 1640
Rush/NPDES: NPDES
Status: Prepped
Current Step: Digestion
Prep Date: 04/03/2013 16:00
Due Date: 04/07/2013
Hold Date: 09/10/2013

Lab Code	Client ID	Bottle #	Initial Amt	Final Volume	Spike Amt	Spike ID	TestNo List	Comments
KQ1303256-02	Method Blank		100 mL	100 mL			Metals Redppt T	
KQ1303256-01	Lab Control Sample		1000 mL	100 mL			Metals Redppt T	
K1302496-001	Intake	.11	1000 mL	100 mL			Metals RedPpt T	
K1302496-002	Outfall 001	.11	1000 mL	100 mL			Metals RedPpt T	
K1302496-003	Outfall 002	.11	1000 mL	100 mL			Metals RedPpt T	
K1302496-004	Storm Outfall 101	.14	1000 mL	100 mL			Metals RedPpt T	
K1302526-001	MW-10	.02	1000 mL	100 mL			Metals Redppt D	
K1302526-002	MW-7	.02	1000 mL	100 mL			Metals Redppt D	
K1302526-003	MW-5	.02	1000 mL	100 mL			Metals Redppt D	
K1302526-003: KQ1303256-03	Duplicate	.02	1000 mL	100 mL			Metals Redppt D	
K1302526-003: KQ1303256-04	Matrix Spike	.02	1000 mL	100 mL			Metals Redppt D	
K1302526-004	MW-14	.02	1000 mL	100 mL			Metals Redppt D	
K1302526-005	MW-1400	.02	1000 mL	100 mL			Metals Redppt D	
K1302526-006	MW-12	.02	1000 mL	100 mL			Metals Redppt D	
K1302526-007	MW-1a	.02	1000 mL	100 mL			Metals Redppt D	
K1302526-008	MW-1	.02	1000 mL	100 mL			Metals Redppt D	
K1302677-001	T2-W3/13-Center 1-Surface	.01	700 mL	100 mL			Metals Redppt T	
K1302701-001	MLS13-73 Seawater Intake	.01	1000 mL	100 mL			Metals Redppt T	
K1302701-002	MLS13-74 Seawater Discharge @ U6 Island Sample Station	.01	1000 mL	100 mL			Metals Redppt T	
K1302701-003	MLS13-75 Seawater Discharge @ Disengaging Basin	.01	1000 mL	100 mL			Metals Redppt T	
K1302796-008	ORLNG-EBB-BT2 3-27-2013	.01	400 mL	100 mL			Metals Redppt D	
K1302796-008	ORLNG-EBB-BT2 3-27-2013	.23	400 mL	100 mL			Metals Redppt T	
K1302920-001	SDF #4	.01	200 mL	100 mL			Metals Redppt T	

22 Total Samples consisting of 18 Client Samples, 2 Client QC Samples, 2 Batch QC Samples associated with the current Prep Run.

Spiking Solutions

Preparation Materials

Preparation Hardware / Equipment

Preparation Steps

Step	Started	Finished	By	Assisted By	Training?	Comments
Digestion	03-APR-13 16:00	04-APR-13 19:00	Anna Cheatley		N	

Comments

LCS and K1302526-003 MS spiked with 2.0mL 200.8 Sol. (ms15-96-A) and 2.0mL 1000ppb Ag (ms16-22-C).

Review

Reviewed by: BJS Date: 4/5/13

Service Request K1302526 (RPTM)_____
Calibration _____040513AMS02_____
QC in calibration 040513AMS02_____
QC Service Request # K1302526_____
STARLIMS Batch # 335178_____

ICP-MS Data Review Form

	Yes	No	NA
1. Appropriate standardization completed	X		
2. ICV within 10 % of true value	X		
3. CCV's in control	X	X	
4. CCB's and/or ICB's below MRL	X		
5. Method blank below MRL	X		
6. LCS in control	X		
7. Spike and duplicate in control	X	X	
8. All analytes within instrument linear range	X		
9. Adequate rinse out time allowed	X		
10. Internal standards in control	X		
11. Interferences checked	X		
12. Se over MRL			X
13. CRA run	X		
14. ICSA and ICSAB in control			X
15. Serial dilution run			X
16. Post spike in control			X
17. Was the run terminated? If so, why.		X	

Comments: High RPD for Ni, Ni & As spikes are out of control. No sample left for reprep. CCV-2 Be out of control. DATA N.R.

Primary Review by _____ Date 4/5/13
Secondary Review by _____ Date 4/5/13
R:\icp\misc\data review forms\PQ ExCell review form

Sample List

Num	Label	Type	Weight	Volume	Dilution	Rack	Row	Column	Height
1	Calibration Blank	Blank	0 kg	0 ml	1.00	0	1	1	145
2	Calibration Std.	Fully Quant Standard	0 kg	0 ml	1.00	0	1	2	145
3	ICV1	Unknown	0 kg	0 ml	1.00	0	1	3	145
4	ICV1	Unknown	0 kg	0 ml	1.00	0	1	3	145
5	CCV1	Unknown	0 kg	0 ml	1.00	0	1	2	145
6	ICB1	Unknown	0 kg	0 ml	1.00	0	1	1	145
7	CCB1	Unknown	0 kg	0 ml	1.00	0	1	1	145
8	LLICVW	Unknown	0 kg	0 ml	1.00	0	1	4	145
9	ICSA	Unknown	0 kg	0 ml	1.00	0	1	5	145
10	ICSAB	Unknown	0 kg	0 ml	1.00	0	1	6	145
11	K1302496-MB	Unknown	0 kg	0 ml	1.00	1	1	1	145
12	LCSW	Unknown	0 kg	0 ml	1.00	1	1	2	145
13	K1302496-001	Unknown	0 kg	0 ml	1.00	1	1	3	145
14	K1302496-001L 1/5	Unknown	0 kg	0 ml	1.00	1	1	4	145
15	K1302496-001A	Unknown	0 kg	0 ml	1.00	1	1	5	145
16	K1302496-002	Unknown	0 kg	0 ml	1.00	1	1	6	145
17	K1302496-003	Unknown	0 kg	0 ml	1.00	1	1	7	145
18	K1302526-003	Unknown	0 kg	0 ml	1.00	1	1	9	145
19	K1302526-003D	Unknown	0 kg	0 ml	1.00	1	1	10	145
20	K1302526-003SD	Unknown	0 kg	0 ml	1.00	1	1	11	145
21	CCV2	Unknown	0 kg	0 ml	1.00	0	1	2	145
22	CCB2	Unknown	0 kg	0 ml	1.00	0	1	1	145
23	LLCCVW1	Unknown	0 kg	0 ml	1.00	0	1	4	145
24	K1302526-001	Unknown	0 kg	0 ml	1.00	1	1	12	145
25	K1302526-002	Unknown	0 kg	0 ml	1.00	1	2	1	145
26	K1302526-004	Unknown	0 kg	0 ml	1.00	1	2	2	145
27	K1302526-005	Unknown	0 kg	0 ml	1.00	1	2	3	145
28	K1302526-006	Unknown	0 kg	0 ml	1.00	1	2	4	145
29	K1302526-007	Unknown	0 kg	0 ml	1.00	1	2	5	145
30	K1302526-008	Unknown	0 kg	0 ml	1.00	1	2	6	145
31	CCV3	Unknown	0 kg	0 ml	1.00	0	1	2	145
32	CCB3	Unknown	0 kg	0 ml	1.00	0	1	1	145
33	K1302677-001	Unknown	0 kg	0 ml	1.00	1	2	7	145
34	K1302701-001	Unknown	0 kg	0 ml	1.00	1	2	8	145
35	K1302701-002	Unknown	0 kg	0 ml	1.00	1	2	9	145
36	K1302701-003	Unknown	0 kg	0 ml	1.00	1	2	10	145
37	K1302796-008	Unknown	0 kg	0 ml	1.00	1	2	11	145
38	K1302796-008 DISS	Unknown	0 kg	0 ml	1.00	1	2	12	145
39	K1302920-001	Unknown	0 kg	0 ml	1.00	1	3	1	145
40	K1302525-MB	Unknown	0 kg	0 ml	1.00	1	3	2	145
41	LCSW	Unknown	0 kg	0 ml	1.00	1	3	3	145
42	CCV4	QC Sample	0 kg	0 ml	1.00	0	1	2	145
43	CCB4	QC Sample	0 kg	0 ml	1.00	0	1	1	145
44	K1302525-008	Unknown	0 kg	0 ml	1.00	1	3	4	145
45	K1302525-008D	Unknown	0 kg	0 ml	1.00	1	3	5	145
46	K1302525-008S	Unknown	0 kg	0 ml	1.00	1	3	6	145
47	K1302525-001	Unknown	0 kg	0 ml	1.00	1	3	7	145
48	K1302525-002	Unknown	0 kg	0 ml	1.00	1	3	8	145
49	K1302525-003	Unknown	0 kg	0 ml	1.00	1	3	9	145

Run - left terminated

Be out of control

4/5/13

Instrument Setup - Configurations

Configuration Name - ALKLS.ALKLSXP310
Description - PQExcell CCT Sim Default
Date - 9:56:35 4/5/13
Maximum Uptake Time - 0
Maximum Washout Time - 0
S-Option Pump Running - No
Plasma Screen Forward - No
Makeup Gas On - No
Use CCT - No
Use Accessory Gas - No

Setting	Value
Extraction	-280.00
Lens1	5.00
Lens2	-45.00
Lens3	-200.00
Pole Bias	1.00
Sampling Depth	375.00
Horizontal	-105.00
Vertical	105.00
Cool	13.00
Auxiliary	0.70
Nebuliser	0.84
Forward power	1,375.00
HT1 Voltage	1,900.00
HT2 Voltage	2,600.00
D1	-40.00
Focus	22.00
	0.00
	0.00

Configuration Name - ALKLS.ALKLSXP310
Description - PQExcell CCT Sim Default
Date - 9:56:35 4/5/13
Maximum Uptake Time - 0
Maximum Washout Time - 0
S-Option Pump Running - No
Plasma Screen Forward - No
Makeup Gas On - No
Use CCT - No
Use Accessory Gas - No

Setting	Value
Extraction	-280.00
Lens1	5.00
Lens2	-45.00
Lens3	-200.00
Pole Bias	1.00
Sampling Depth	375.00
Horizontal	-105.00
Vertical	105.00

ExCell Mass Calibration **Date: 4/5/2013**

Mass	Mass DAC	Peak Width (AMU)	Error (AMU)	Include	Masses in Tune Solution
7.016	1471	0.664	-0.009	TRUE	
9.012	1978	0.664	-0.007	TRUE	Li-7
23.985	5796	0.664	-0.049	TRUE	Be-9
24.986	6050	0.613	-0.047	TRUE	Mg-24
25.983	6303	0.664	-0.045	TRUE	Co-59
26.982	6557	0.715	-0.045	TRUE	In-115
45.953	11363	0.767	0.028	TRUE	Ce-140
50.944	12631	0.818	0.032	TRUE	Pb-208
51.94	12884	0.767	0.034	TRUE	Bi-209
53.949	13391	0.767	0.049	TRUE	U-238
55.935	13898	0.767	0.041	TRUE	
56.935	14158	0.767	0.02	TRUE	
58.933	14652	0.767	0.075	TRUE	
62.93	15673	0.818	0.057	TRUE	
69.925	17460	0.767	0.026	TRUE	
75.92	18988	0.818	0.013	TRUE	
112.904	28406	0.715	-0.03	TRUE	
114.904	28919	0.767	-0.048	TRUE	
118.903	29966	0.715	-0.164	FALSE	
128.905	32488	0.715	-0.077	TRUE	
131.905	33242	0.715	-0.041	TRUE	
137.906	34763	0.715	-0.019	TRUE	
139.905	35276	0.767	-0.036	TRUE	
141.908	35783	0.767	-0.026	TRUE	
155.923	39332	0.767	0.039	TRUE	
203.973	51565	0.767	0.008	TRUE	
205.974	52072	0.767	0.017	TRUE	
206.976	52326	0.818	0.02	TRUE	
207.977	52579	0.767	0.027	TRUE	
208.98	52839	0.767	0.009	TRUE	
238.051	60243	0.715	-0.017	TRUE	

SHORT TERM STABILITY 04-05-13.vge

Excluded In Calib | Excluded In Results | Peak Run Excluded | Multi Element | Semi Quant | Internal Standard | Standard Addition

Uncorrected ICPS Per Mass

S-Calibration Has Edited Standard E-Calibration Edited I-Invalid Calibration V-Valley Integration Failed
F-Interference Correction Failed T-Tripped P-Pulse Counting M-Result Over Max

Run	Label	TimeStamp	5Bkg	7Li	9Be	24Mg	59Co	115In
1	Stability 04-05-2013	4/5/2013 6:31:33 A	(P)0.000	(P)21882.753	(P)5609.101	(P)65118.270	(P)29342.774	(P)51747.066
2	Stability 04-05-2013	4/5/2013 6:32:56 A	(P)0.000	(P)21185.205	(P)5463.545	(P)66444.688	(P)29040.655	(P)51821.688
3	Stability 04-05-2013	4/5/2013 6:34:20 A	(P)0.000	(P)20930.494	(P)5360.672	(P)64168.021	(P)28523.614	(P)52197.886
4	Stability 04-05-2013	4/5/2013 6:35:43 A	(P)0.000	(P)20824.347	(P)5370.009	(P)64572.988	(P)28736.044	(P)52803.938
5	Stability 04-05-2013	4/5/2013 6:37:06 A	(P)0.000	(P)20974.057	(P)5443.537	(P)64943.011	(P)28699.135	(P)52516.543
	Mean of Stability 04-	4/5/2013 6:31:33 A	(P)0.000	(P)21159.371	(P)5449.373	(P)65049.396	(P)28868.444	(P)52217.424
	SD of Stability 04-05-2		(P)0.000	(P)425.122	(P)99.893	(P)861.204	(P)323.940	(P)450.471
	%RSD of Stability 04		(P)0.000	(P)2.009	(P)1.833	(P)1.324	(P)1.122	(P)0.863

Run	Label	TimeStamp	208Pb	209Bi	220Bkg	238U
1	Stability 04-05-2013	4/5/2013 6:31:33 A	(P)29799.051	(P)47029.796	(P)0.000	(P)53405.834
2	Stability 04-05-2013	4/5/2013 6:32:56 A	(P)29952.537	(P)47501.348	(P)0.000	(P)53704.603
3	Stability 04-05-2013	4/5/2013 6:34:20 A	(P)30515.728	(P)48321.594	(P)0.000	(P)55504.501
4	Stability 04-05-2013	4/5/2013 6:35:43 A	(P)30924.772	(P)49010.264	(P)0.000	(P)56426.778
5	Stability 04-05-2013	4/5/2013 6:37:06 A	(P)31062.907	(P)49064.784	(P)0.000	(P)56252.578
	Mean of Stability 04-	4/5/2013 6:31:33 A	(P)30450.999	(P)48185.557	(P)0.000	(P)55058.859
	SD of Stability 04-05-2		(P)564.930	(P)904.933	(P)0.000	(P)1419.618
	%RSD of Stability 04		(P)1.855	(P)1.878	(P)0.000	(P)2.578

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**Calibration Blank**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:04**					
Arsenic	75	0.0274	-0.0193	-0.0082	**0**	0.0244	0
Beryllium	9	0.002	0.0015	-0.0035	**0**	0.003	0
Cadmium	111	-0.001	0.008	-0.007	**0**	0.0076	0
Cadmium	114	0.0013	-0.0018	0.0005	**0**	0.0016	0
Chromium	52	-0.0067	-0.0044	0.011	**0**	0.0096	0
Chromium	53	0.1925	-0.1494	-0.0432	**0**	0.175	0
Copper	63	-0.0085	0.0106	-0.0021	**0**	0.0097	0
Copper	65	0.0215	-0.0034	-0.018	**0**	0.02	0
Lead	206	-0.0027	0.0018	0.0009	**0**	0.0024	0
Lead	207	-0.0014	-0.0008	0.0021	**0**	0.0019	0
Lead	208	-0.0019	0.0007	0.0013	**0**	0.0017	0
Molybdenum	95	-0.0008	0.0022	-0.0013	**0**	0.0019	0
Molybdenum	97	-0.0037	0.0084	-0.0047	**0**	0.0073	0
Molybdenum	98	0.0044	-0.0009	-0.0035	**0**	0.004	0
Nickel	60	-0.0219	0.1048	-0.0829	**0**	0.0957	0
Nickel	62	0.0537	0.0038	-0.0575	**0**	0.0557	0
Selenium	77	0.2912	-0.2679	-0.0233	**0**	0.2803	0
Selenium	78	0.1474	-0.1002	-0.0472	**0**	0.1304	0
Selenium	82	0.5746	-0.2028	-0.3718	**0**	0.5047	0
Silver	107	-0.0007	0.0021	-0.0014	**0**	0.0019	0
Silver	109	-0.0005	-0.0001	0.0006	**0**	0.0006	0
Thallium	203	0.0004	-0.0006	0.0002	**0**	0.0005	0
Thallium	205	0.0002	-0.0001	-0.0001	**0**	0.0002	0
Zinc	66	0.051	0.0079	-0.0589	**0**	0.0554	0
Zinc	67	0.0297	0.0124	-0.042	**0**	0.0374	0
Zinc	68	0.0079	0.0057	-0.0136	**0**	0.0119	0

Internal Standard Factors:

Lithium	6	0.988	1.012	1.001	**0.988**	n/a	n/a
Nickel	61	0.97	1.002	1.03	**0.97**	n/a	n/a
Gallium	71	0.975	0.996	1.03	**0.975**	n/a	n/a
Indium	115	0.965	1.015	1.022	**0.965**	n/a	n/a
Lutetium	175	0.958	1.008	1.037	**0.958**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**Calibration Std.**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:08**					
Arsenic	75	25.53	24.88	24.59	**25**	0.485	1.94
Beryllium	9	25.04	24.7	25.27	**25**	0.2861	1.144
Cadmium	111	24.56	25.32	25.12	**25**	0.3938	1.575
Cadmium	114	24.41	25.01	25.58	**25**	0.5814	2.326
Chromium	52	25.66	23.94	25.4	**25**	0.929	3.716
Chromium	53	25.21	24.64	25.15	**25**	0.3156	1.263
Copper	63	25.45	24.45	25.1	**25**	0.504	2.016
Copper	65	25.36	24.75	24.89	**25**	0.3209	1.284
Lead	206	24.81	24.25	25.94	**25**	0.8641	3.456
Lead	207	24.75	24.43	25.82	**25**	0.7262	2.905
Lead	208	24.94	24.44	25.62	**25**	0.591	2.364
Molybdenum	95	24.58	25.22	25.2	**25**	0.3638	1.455
Molybdenum	97	24.47	25.62	24.91	**25**	0.5813	2.325
Molybdenum	98	24.52	25.22	25.26	**25**	0.4175	1.67
Nickel	60	25.22	24.58	25.2	**25**	0.3634	1.454
Nickel	62	26	25.29	23.71	**25**	1.173	4.694
Selenium	77	25.96	23.98	25.07	**25**	0.9908	3.963
Selenium	78	25.11	24.7	25.19	**25**	0.2652	1.061
Selenium	82	25.48	24.09	25.43	**25**	0.785	3.14
Silver	107	24.6	24.87	25.53	**25**	0.4774	1.91
Silver	109	24.5	24.96	25.54	**25**	0.5221	2.088
Thallium	203	24.73	24.28	25.99	**25**	0.8865	3.546
Thallium	205	24.95	24.45	25.59	**25**	0.5724	2.29
Zinc	66	25.35	24.9	24.75	**25**	0.3134	1.254
Zinc	67	25.29	24.42	25.29	**25**	0.5005	2.002
Zinc	68	25.27	24.59	25.14	**25**	0.3623	1.449

Internal Standard Factors:

Lithium	6	0.986	0.992	0.975	**0.986**	n/a	n/a
Nickel	61	0.971	0.965	0.983	**0.971**	n/a	n/a
Gallium	71	1.081	1.076	1.098	**1.081**	n/a	n/a
Indium	115	1.009	1.053	1.067	**1.009**	n/a	n/a
Lutetium	175	1.031	1.044	1.111	**1.031**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**ICV1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:12**					
Arsenic	75	24.18	24	23.62	**23.93**	0.2837	1.185
Beryllium	9	2.414	2.324	2.259	**2.333**	0.078	3.342
Cadmium	111	12.63	11.9	12.57	**12.37**	0.4034	3.262
Cadmium	114	12.34	11.98	12.44	**12.25**	0.2384	1.946
Chromium	52	9.096	8.901	8.85	**8.949**	0.13	1.453
Chromium	53	9.309	8.756	8.532	**8.866**	0.3999	4.511
Copper	63	11.85	11.84	11.73	**11.81**	0.0655	0.5552
Copper	65	12.18	11.82	11.52	**11.84**	0.3304	2.791
Lead	206	23.76	24.37	23.36	**23.83**	0.5065	2.126
Lead	207	23.65	24.28	23.71	**23.88**	0.3477	1.456
Lead	208	23.63	24.36	23.83	**23.94**	0.375	1.567
Molybdenum	95	24.67	23.67	25.44	**24.6**	0.8883	3.612
Molybdenum	97	23.76	23.84	24.34	**23.98**	0.3151	1.314
Molybdenum	98	25.15	23.81	24.55	**24.51**	0.6691	2.73
Nickel	60	23.83	24.32	23.38	**23.84**	0.4726	1.982
Nickel	62	22.92	23.63	24.91	**23.82**	1.009	4.237
Selenium	77	24.11	23.35	23.67	**23.71**	0.3783	1.596
Selenium	78	23.73	24.56	23.61	**23.97**	0.5139	2.144
Selenium	82	23.98	23.41	23.51	**23.63**	0.3063	1.296
Silver	107	12.66	11.92	12.61	**12.4**	0.4128	3.33
Silver	109	12.36	12.08	12.34	**12.26**	0.1522	1.242
Thallium	203	24.02	24.06	23.51	**23.86**	0.3074	1.288
Thallium	205	23.87	24.21	23.52	**23.86**	0.3456	1.448
Zinc	66	24.22	23.71	24.07	**24**	0.2587	1.078
Zinc	67	31.54	30.71	30.33	**30.86**	0.6212	2.013
Zinc	68	28.78	29.11	28.3	**28.73**	0.4071	1.417

4/5/13
See RN

Internal Standard Factors:

Lithium	6	0.965	0.97	0.984	**0.965**	n/a	n/a
Nickel	61	0.981	1.001	1.005	**0.981**	n/a	n/a
Gallium	71	1.068	1.079	1.086	**1.068**	n/a	n/a
Indium	115	1.047	1.031	1.08	**1.047**	n/a	n/a
Lutetium	175	1.029	1.074	1.063	**1.029**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**ICV1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:18**					
Arsenic	75	25.85	26.47	25.44	**25.92**	0.5174	1.996
Beryllium	9	2.434	2.56	2.438	**2.477**	0.0713	2.877
Cadmium	111	12.76	12.5	12.72	**12.66**	0.1404	1.109
Cadmium	114	12.96	12.39	12.7	**12.68**	0.286	2.255
Chromium	52	10.06	10.27	10.24	**10.19**	0.1162	1.141
Chromium	53	9.389	9.581	9.704	**9.558**	0.1588	1.661
Copper	63	13.04	13.03	12.98	**13.02**	0.0306	0.2354
Copper	65	13.1	12.68	13.14	**12.98**	0.2537	1.955
Lead	206	25.64	25.66	24.97	**25.42**	0.3914	1.54
Lead	207	25.58	25.74	24.86	**25.39**	0.4697	1.85
Lead	208	25.53	25.46	24.92	**25.3**	0.3338	1.319
Molybdenum	95	24.98	24.49	25.78	**25.09**	0.6502	2.592
Molybdenum	97	25.71	25.67	24.95	**25.44**	0.4263	1.676
Molybdenum	98	25.71	24.63	25.33	**25.23**	0.5521	2.189
Nickel	60	24.01	24.88	22.74	**23.88**	1.073	4.493
Nickel	62	25.92	25.54	23.34	**24.94**	1.392	5.581
Selenium	77	26.67	27.03	27.61	**27.1**	0.4788	1.767
Selenium	78	26.16	25.45	25.66	**25.76**	0.3647	1.416
Selenium	82	25.59	25.77	25.02	**25.46**	0.3906	1.534
Silver	107	13.12	13.04	12.77	**12.98**	0.1838	1.416
Silver	109	12.87	12.72	12.79	**12.79**	0.0782	0.6112
Thallium	203	25.95	25.21	25.11	**25.42**	0.4579	1.801
Thallium	205	25.22	25.7	25.03	**25.32**	0.3416	1.349
Zinc	66	26.38	25.63	25.86	**25.96**	0.3826	1.474
Zinc	67	32.97	31.64	32.88	**32.5**	0.7451	2.293
Zinc	68	31.7	31.13	31.4	**31.41**	0.2876	0.9155

Internal Standard Factors:

Lithium	6	0.971	0.969	0.963	**0.971**	n/a	n/a
Nickel	61	0.943	0.978	0.969	**0.943**	n/a	n/a
Gallium	71	1.114	1.127	1.149	**1.114**	n/a	n/a
Indium	115	1.031	1.026	1.049	**1.031**	n/a	n/a
Lutetium	175	1.025	1.045	1.056	**1.025**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**CCV1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:21**					
Arsenic	75	24.21	24.15	24.84	**24.4**	0.3853	1.579
Beryllium	9	23.97	21.91	23.91	**23.27**	1.17	5.03
Cadmium	111	24.44	24.87	24.83	**24.71**	0.2383	0.9644
Cadmium	114	25.03	24.95	24.78	**24.92**	0.127	0.5096
Chromium	52	24.58	25.33	24.76	**24.89**	0.3932	1.58
Chromium	53	22.06	22.16	22.83	**22.35**	0.4192	1.876
Copper	63	24.74	24.49	24.95	**24.72**	0.2312	0.935
Copper	65	24.79	24.11	24.72	**24.54**	0.3776	1.539
Lead	206	25.04	25.56	24.61	**25.07**	0.4787	1.909
Lead	207	24.91	25.42	24.61	**24.98**	0.4073	1.631
Lead	208	25.05	25.44	25.01	**25.17**	0.2366	0.94
Molybdenum	95	24.21	24.99	24.53	**24.58**	0.3897	1.586
Molybdenum	97	24.29	24.59	24.27	**24.39**	0.1751	0.7179
Molybdenum	98	24.17	24.27	25.08	**24.51**	0.4987	2.035
Nickel	60	24.19	26.74	25.26	**25.4**	1.279	5.035
Nickel	62	24.13	28.45	25.28	**25.95**	2.238	8.622
Selenium	77	23.41	24.44	24.82	**24.22**	0.7293	3.011
Selenium	78	24.19	24.51	24.3	**24.33**	0.1591	0.6537
Selenium	82	23.51	23.99	24.4	**23.97**	0.4422	1.845
Silver	107	24.92	25.01	24.73	**24.89**	0.1421	0.5709
Silver	109	25.33	24.57	24.74	**24.88**	0.3992	1.604
Thallium	203	24.6	25.54	24.65	**24.93**	0.5261	2.11
Thallium	205	25.31	25.3	24.72	**25.11**	0.3338	1.329
Zinc	66	23.86	24.53	24.52	**24.3**	0.3832	1.577
Zinc	67	24.49	25.07	24.36	**24.64**	0.3766	1.528
Zinc	68	24.83	24.97	24.92	**24.91**	0.0719	0.2886

Internal Standard Factors:

Lithium	6	0.95	0.955	0.975	**0.95**	n/a	n/a
Nickel	61	0.972	1.028	1.009	**0.972**	n/a	n/a
Gallium	71	1.079	1.102	1.116	**1.079**	n/a	n/a
Indium	115	1.027	1.038	1.047	**1.027**	n/a	n/a
Lutetium	175	1.017	1.06	1.044	**1.017**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**ICB1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:25**					
Arsenic	75	-0.3443	-0.4238	-0.2598	**-0.3426**	0.0821	23.95
Beryllium	9	0.0096	0.0067	0.0091	**0.0085**	0.0016	18.25
Cadmium	111	0.0012	-0.0018	-0.0002	**-0.0003**	0.0015	550
Cadmium	114	0.0081	0.0027	0.0067	**0.0059**	0.0028	47.56
Chromium	52	-0.0592	0.0024	-0.0151	**-0.024**	0.0317	132.4
Chromium	53	-2.289	-2.011	-2.27	**-2.19**	0.1553	7.09
Copper	63	-0.0258	-0.0261	-0.017	**-0.023**	0.0052	22.65
Copper	65	-0.0418	-0.05	-0.0304	**-0.0407**	0.0098	24.07
Lead	206	0.0036	0.0086	0.0061	**0.0061**	0.0025	41.23
Lead	207	-0.0012	0.0011	0.0037	**0.0012**	0.0025	202.2
Lead	208	0.0058	0.0056	0.0089	**0.0068**	0.0019	27.66
Molybdenum	95	0.0423	0.0263	0.0216	**0.0301**	0.0108	36.03
Molybdenum	97	0.0579	0.022	0.0191	**0.033**	0.0216	65.52
Molybdenum	98	0.0545	0.027	0.0282	**0.0366**	0.0156	42.52
Nickel	60	0.1963	0.0435	0.2152	**0.1517**	0.0941	62.06
Nickel	62	0.0747	0.5332	-0.0996	**0.1694**	0.3269	193
Selenium	77	-0.1113	0.262	0.2849	**0.1452**	0.2224	153.2
Selenium	78	-0.317	-0.3703	-0.3418	**-0.343**	0.0267	7.784
Selenium	82	-1.415	-1.519	-1.186	**-1.373**	0.1705	12.42
Silver	107	0.0323	0.0212	0.0201	**0.0245**	0.0067	27.53
Silver	109	0.0382	0.0161	0.0177	**0.024**	0.0123	51.27
Thallium	203	0.017	0.0113	0.0119	**0.0134**	0.0031	23.22
Thallium	205	0.0161	0.0099	0.012	**0.0127**	0.0031	24.77
Zinc	66	-0.1639	-0.172	-0.1658	**-0.1673**	0.0042	2.531
Zinc	67	-0.2924	-0.2346	-0.2158	**-0.2476**	0.04	16.13
Zinc	68	-0.012	-0.0097	0.0238	**0.0007**	0.0201	2830

Internal Standard Factors:

Lithium	6	0.905	0.896	0.914	**0.905**	n/a	n/a
Nickel	61	1.041	1.041	1.07	**1.041**	n/a	n/a
Gallium	71	1.045	1.087	1.084	**1.045**	n/a	n/a
Indium	115	0.984	1.026	1.037	**0.984**	n/a	n/a
Lutetium	175	1.011	1.009	1.043	**1.011**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**CCB1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:29**					
Arsenic	75	-0.3668	-0.352	-0.3019	**-0.3402**	0.034	9.987
Beryllium	9	0.0066	0.0059	0.0035	**0.0053**	0.0016	30.14
Cadmium	111	-0.0021	0.0117	0.0009	**0.0035**	0.0073	207.1
Cadmium	114	0.0064	0.0082	0.0078	**0.0075**	0.0009	12.68
Chromium	52	0.0209	0.0928	0.011	**0.0416**	0.0446	107.4
Chromium	53	-2.244	-2.024	-2.317	**-2.195**	0.1527	6.957
Copper	63	-0.0131	-0.0069	-0.0266	**-0.0155**	0.0101	64.86
Copper	65	-0.0463	-0.0282	-0.0304	**-0.035**	0.0098	28.12
Lead	206	0.0047	0.0116	0.0068	**0.0077**	0.0035	45.75
Lead	207	0.0056	0.0023	0.0016	**0.0031**	0.0022	68.72
Lead	208	0.0059	0.0082	0.0059	**0.0067**	0.0014	20.31
Molybdenum	95	0.0132	0.0131	0.0149	**0.0137**	0.001	7.237
Molybdenum	97	0.0188	0.0178	0.01	**0.0155**	0.0048	31.14
Molybdenum	98	0.0109	0.0137	0.0097	**0.0114**	0.002	17.93
Nickel	60	0.098	0.2747	0.2718	**0.2148**	0.1012	47.11
Nickel	62	-1.994	-0.8235	-0.097	**-0.9714**	0.957	98.51
Selenium	77	0.2759	0.5746	-0.1009	**0.2498**	0.3385	135.5
Selenium	78	-0.2772	-0.0175	-0.1349	**-0.1432**	0.1301	90.84
Selenium	82	-1.398	-1.459	-1.545	**-1.467**	0.074	5.041
Silver	107	0.0121	0.0122	0.0104	**0.0116**	0.001	8.88
Silver	109	0.0062	0.012	0.0062	**0.0081**	0.0034	41.49
Thallium	203	0.0034	0.0116	0.0074	**0.0075**	0.0041	54.58
Thallium	205	0.0053	0.0095	0.006	**0.007**	0.0023	32.31
Zinc	66	-0.1638	-0.145	-0.151	**-0.1533**	0.0096	6.272
Zinc	67	-0.2756	-0.2802	-0.3165	**-0.2908**	0.0224	7.713
Zinc	68	0.002	0.0536	0.0233	**0.0263**	0.0259	98.54

Internal Standard Factors:

Lithium	6	0.905	0.903	0.885	**0.905**	n/a	n/a
Nickel	61	1.01	1.036	1.078	**1.01**	n/a	n/a
Gallium	71	1.082	1.121	1.099	**1.082**	n/a	n/a
Indium	115	1.01	1.046	1.03	**1.01**	n/a	n/a
Lutetium	175	0.997	1.018	1.007	**0.997**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**LLICVW**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:32**					
Arsenic	75	4.725	4.322	4.869	**4.639**	0.2835	6.111
Beryllium	9	0.1801	0.1774	0.1895	**0.1823**	0.0063	3.475
Cadmium	111	0.1843	0.1672	0.1884	**0.18**	0.0113	6.255
Cadmium	114	0.1938	0.184	0.2086	**0.1955**	0.0124	6.344
Chromium	52	1.83	1.855	1.849	**1.845**	0.0128	0.6943
Chromium	53	-0.312	-0.3004	0.0407	**-0.1905**	0.2004	105.2
Copper	63	0.9504	0.9555	0.9674	**0.9578**	0.0088	0.9147
Copper	65	0.9738	0.9257	0.9714	**0.957**	0.0271	2.833
Lead	206	0.1902	0.199	0.2065	**0.1986**	0.0082	4.114
Lead	207	0.1917	0.2023	0.1887	**0.1943**	0.0071	3.679
Lead	208	0.1931	0.2034	0.2014	**0.1993**	0.0054	2.734
Molybdenum	95	0.4789	0.4278	0.4657	**0.4574**	0.0265	5.798
Molybdenum	97	0.4873	0.4475	0.4718	**0.4689**	0.0201	4.277
Molybdenum	98	0.48	0.457	0.4852	**0.4741**	0.015	3.16
Nickel	60	2.135	2.144	2.186	**2.155**	0.0271	1.258
Nickel	62	1.92	1.399	2.672	**1.997**	0.6399	32.04
Selenium	77	8.304	8.982	8.405	**8.564**	0.3657	4.27
Selenium	78	8.866	8.829	8.881	**8.859**	0.0271	0.3057
Selenium	82	8.162	7.558	8.079	**7.933**	0.3273	4.126
Silver	107	0.1947	0.1866	0.1837	**0.1883**	0.0057	3.024
Silver	109	0.1935	0.1829	0.1884	**0.1883**	0.0053	2.826
Thallium	203	0.1975	0.1979	0.2091	**0.2015**	0.0066	3.275
Thallium	205	0.1897	0.2083	0.1937	**0.1972**	0.0098	4.965
Zinc	66	4.507	4.425	4.47	**4.467**	0.0408	0.9137
Zinc	67	3.933	3.9	4.006	**3.946**	0.0543	1.376
Zinc	68	4.479	4.231	4.454	**4.388**	0.1364	3.109

Internal Standard Factors:

Lithium	6	0.875	0.865	0.884	**0.875**	n/a	n/a
Nickel	61	1.003	1.019	1.03	**1.003**	n/a	n/a
Gallium	71	1.073	1.084	1.11	**1.073**	n/a	n/a
Indium	115	1.024	1.003	1.034	**1.024**	n/a	n/a
Lutetium	175	0.961	1.031	1.016	**0.961**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**ICSA**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:37**					
Arsenic	75	-0.5522	-0.4711	-0.4989	**-0.5074**	0.0412	8.121
Beryllium	9	0.0007	0.0031	0.0042	**0.0026**	0.0018	66.54
Cadmium	111	0.2452	0.2468	0.2353	**0.2424**	0.0062	2.567
Cadmium	114	0.2115	0.2184	0.2197	**0.2165**	0.0044	2.035
Chromium	52	0.6223	0.6649	0.573	**0.62**	0.046	7.417
Chromium	53	3.572	4.115	4.193	**3.96**	0.3383	8.542
Copper	63	1.809	1.763	1.706	**1.759**	0.0515	2.928
Copper	65	1.176	1.164	1.072	**1.138**	0.0569	5.002
Lead	206	0.1423	0.1384	0.1401	**0.1403**	0.0019	1.389
Lead	207	0.1263	0.1256	0.1211	**0.1243**	0.0028	2.276
Lead	208	0.1364	0.1331	0.1295	**0.133**	0.0034	2.58
Molybdenum	95	47.67	49.01	48.15	**48.28**	0.681	1.411
Molybdenum	97	48.06	49.03	48.64	**48.57**	0.4865	1.002
Molybdenum	98	50.45	48.87	50.03	**49.78**	0.8189	1.645
Nickel	60	3.36	3.612	3.356	**3.443**	0.1466	4.257
Nickel	62	5.603	6.162	5.368	**5.711**	0.4077	7.14
Selenium	77	8.326	8.513	8.223	**8.354**	0.1469	1.758
Selenium	78	0.0705	-0.0108	0.165	**0.0749**	0.088	117.5
Selenium	82	-1.587	-1.635	-1.851	**-1.691**	0.1407	8.321
Silver	107	0.0349	0.0324	0.0323	**0.0332**	0.0015	4.497
Silver	109	0.0309	0.0324	0.0366	**0.0333**	0.003	8.873
Thallium	203	0.0125	0.0101	0.0132	**0.0119**	0.0017	13.93
Thallium	205	0.0142	0.0141	0.0136	**0.014**	0.0003	2.182
Zinc	66	3.174	3.212	3.058	**3.148**	0.0803	2.55
Zinc	67	5.539	5.699	5.575	**5.604**	0.0841	1.501
Zinc	68	2.921	2.829	2.768	**2.839**	0.0771	2.714

Internal Standard Factors:

Lithium	6	1.108	1.162	1.179	**1.108**	n/a	n/a
Nickel	61	1.155	1.168	1.149	**1.155**	n/a	n/a
Gallium	71	1.21	1.231	1.198	**1.21**	n/a	n/a
Indium	115	1.092	1.116	1.123	**1.092**	n/a	n/a
Lutetium	175	1.067	1.088	1.107	**1.067**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**ICSAB**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:40**					
Arsenic	75	26.36	26.69	26.48	**26.51**	0.1679	0.6335
Beryllium	9	-0.001	-0.0006	0.0009	**-0.0002**	0.001	443.7
Cadmium	111	25.11	24.68	24.61	**24.8**	0.2719	1.096
Cadmium	114	24.03	23.99	24.67	**24.23**	0.383	1.581
Chromium	52	49.29	49.73	50.95	**49.99**	0.8601	1.721
Chromium	53	51.49	51.66	53.17	**52.11**	0.9253	1.776
Copper	63	47.31	47.84	48.51	**47.89**	0.5984	1.25
Copper	65	45.94	46.44	49.28	**47.22**	1.803	3.818
Lead	206	0.06	0.0565	0.0551	**0.0572**	0.0025	4.389
Lead	207	0.0527	0.0504	0.053	**0.052**	0.0014	2.751
Lead	208	0.0592	0.0552	0.0567	**0.057**	0.002	3.538
Molybdenum	95	48.61	49.74	49.55	**49.3**	0.6058	1.229
Molybdenum	97	48.84	48.81	50.29	**49.31**	0.8448	1.713
Molybdenum	98	48.78	48.83	50.18	**49.26**	0.7903	1.604
Nickel	60	48.09	47.29	46.98	**47.45**	0.5708	1.203
Nickel	62	51.68	50.92	51.67	**51.42**	0.4361	0.848
Selenium	77	32.32	32.8	33.85	**32.99**	0.7808	2.367
Selenium	78	25.26	25.61	26.83	**25.9**	0.8252	3.186
Selenium	82	24.46	24.45	24.53	**24.48**	0.0411	0.1677
Silver	107	11.72	11.95	11.98	**11.88**	0.1419	1.194
Silver	109	11.91	11.81	11.92	**11.88**	0.0597	0.5024
Thallium	203	0.0096	0.0079	0.0057	**0.0077**	0.002	25.43
Thallium	205	0.0086	0.0084	0.0088	**0.0086**	0.0002	2.033
Zinc	66	25.48	25.69	26.06	**25.74**	0.2937	1.141
Zinc	67	27	26.87	29.12	**27.66**	1.262	4.562
Zinc	68	23.59	23.63	24.21	**23.81**	0.3493	1.467

Internal Standard Factors:

Lithium	6	1.198	1.189	1.204	**1.198**	n/a	n/a
Nickel	61	1.01	1.028	1.018	**1.01**	n/a	n/a
Gallium	71	1.143	1.165	1.191	**1.143**	n/a	n/a
Indium	115	1.079	1.084	1.089	**1.079**	n/a	n/a
Lutetium	175	1.083	1.064	1.108	**1.083**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302496-MB**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:48**					
Arsenic	75	-0.2722	-0.2082	-0.2236	**-0.2347**	0.0334	14.23
~~Beryllium~~	~~9~~	~~-0.0041~~	~~-0.0025~~	~~-0.0046~~	~~**-0.0037**~~	~~0.0011~~	~~28.69~~
Cadmium	111	0.0267	0.025	0.024	**0.0253**	0.0014	5.464
Cadmium	114	0.0008	0.0055	0.0047	**0.0037**	0.0025	69.18
Chromium	52	0.3444	0.4304	0.413	**0.3959**	0.0455	11.49
Chromium	53	-1.868	-1.63	-1.544	**-1.681**	0.1676	9.973
Copper	63	0.2771	0.2935	0.3478	**0.3061**	0.037	12.07
Copper	65	-0.0593	-0.0417	-0.042	**-0.0477**	0.0101	21.17
Lead	206	0.0231	0.0231	0.02	**0.0221**	0.0018	8.29
Lead	207	0.0188	0.0215	0.0268	**0.0224**	0.0041	18.25
Lead	208	0.0239	0.0259	0.0253	**0.025**	0.001	4.02
Molybdenum	95	0.0097	0.0094	0.0097	**0.0096**	0.0002	1.737
Molybdenum	97	0.0482	0.0496	0.0304	**0.0427**	0.0107	25.07
Molybdenum	98	0.0084	0.0061	0.0043	**0.0063**	0.0021	33.05
Nickel	60	0.1086	0.1135	-0.024	**0.066**	0.078	118.2
Nickel	62	1.648	2.711	0.2327	**1.531**	1.243	81.23
Selenium	77	-1.24	-0.6689	-0.7363	**-0.8816**	0.3119	35.38
Selenium	78	-0.0144	-0.0274	0.0941	**0.0174**	0.0667	383.3
Selenium	82	-1.475	-1.057	-1.063	**-1.198**	0.2394	19.97
Silver	107	0.0109	0.0136	0.0111	**0.0119**	0.0015	12.53
Silver	109	0.0154	0.0123	0.0132	**0.0136**	0.0016	11.44
Thallium	203	0.0004	-0.001	0.0026	**0.0007**	0.0018	272.6
Thallium	205	0.0016	0	0.0005	**0.0007**	0.0008	116.3
Zinc	66	0.2383	0.2469	0.2396	**0.2416**	0.0047	1.933
Zinc	67	0.5638	0.6112	0.6158	**0.5969**	0.0288	4.828
Zinc	68	0.4187	0.4667	0.4735	**0.453**	0.0299	6.591

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Internal Standard Factors:

Lithium	6	0.926	0.944	0.953	**0.926**	n/a	n/a
Nickel	61	1.147	1.188	1.182	**1.147**	n/a	n/a
Gallium	71	0.935	0.983	1.017	**0.935**	n/a	n/a
Indium	115	0.887	0.939	0.941	**0.887**	n/a	n/a
Lutetium	175	0.862	0.887	0.915	**0.862**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**LCSW**				**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:52**						
Arsenic	75		19.37	19.98	19.06	**19.47**	0.4658	2.393
~~Beryllium~~	~~9~~		~~12.22~~	~~11.8~~	~~12.02~~	~~**12.01**~~	~~0.2102~~	~~1.75~~
Cadmium	111		19.33	19.47	20.2	**19.67**	0.4712	2.396
Cadmium	114		18.94	19.66	19.73	**19.45**	0.4362	2.243
Chromium	52		18.52	19.43	19.17	**19.04**	0.4662	2.449
Chromium	53		16.33	15.91	16.36	**16.2**	0.2526	1.559
Copper	63		19.4	19.08	18.78	**19.09**	0.3121	1.635
Copper	65		18.85	19	18.96	**18.94**	0.0753	0.3977
Lead	206		19.39	19.83	19.02	**19.41**	0.4047	2.084
Lead	207		19.31	19.45	19.33	**19.36**	0.0727	0.3754
Lead	208		19.4	19.68	19.13	**19.4**	0.2797	1.441
Molybdenum	95		4.016	4.068	4.198	**4.094**	0.0937	2.288
Molybdenum	97		4.137	4.215	4.217	**4.189**	0.0453	1.08
Molybdenum	98		4.229	4.129	4.158	**4.172**	0.0516	1.236
Nickel	60		19.61	19.06	20.02	**19.56**	0.479	2.448
Nickel	62		20.99	20.17	19.65	**20.27**	0.676	3.335
Selenium	77		17.7	17.45	18.16	**17.77**	0.3596	2.023
Selenium	78		19.22	19.56	18.54	**19.11**	0.5161	2.701
Selenium	82		18.17	18	18.23	**18.13**	0.1174	0.6477
Silver	107		18.18	18.68	19.02	**18.63**	0.4238	2.275
Silver	109		19.15	19.19	19.05	**19.13**	0.0731	0.3822
Thallium	203		18.46	19.17	18.81	**18.81**	0.354	1.882
Thallium	205		18.82	19.33	18.67	**18.94**	0.3486	1.84
Zinc	66		19.64	20.08	19.19	**19.64**	0.4448	2.265
Zinc	67		19.4	19.52	19.07	**19.33**	0.237	1.226
Zinc	68		19.49	19.14	18.98	**19.2**	0.2595	1.351

Internal Standard Factors:

Lithium	6	0.948	0.939	0.958	**0.948**	n/a	n/a
Nickel	61	0.914	0.912	0.93	**0.914**	n/a	n/a
Gallium	71	0.975	0.992	0.988	**0.975**	n/a	n/a
Indium	115	0.894	0.917	0.935	**0.894**	n/a	n/a
Lutetium	175	0.881	0.913	0.91	**0.881**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302496-001**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:56**					
Arsenic	75	13.94	13.62	14.08	**13.88**	0.2315	1.668
~~Beryllium~~	~~9~~	~~0.0062~~	~~0.0056~~	~~-0.0002~~	~~**0.0038**~~	~~0.0035~~	~~91.58~~
Cadmium	111	0.1666	0.1528	0.1662	**0.1619**	0.0078	4.839
Cadmium	114	0.1889	0.1747	0.1733	**0.179**	0.0086	4.829
Chromium	52	2.557	2.583	2.703	**2.615**	0.078	2.984
Chromium	53	5.041	4.878	5.471	**5.13**	0.306	5.965
Copper	63	12.53	12.59	12.88	**12.67**	0.1894	1.495
Copper	65	6.736	6.651	6.778	**6.722**	0.0648	0.9633
Lead	206	0.3898	0.3837	0.38	**0.3845**	0.005	1.29
Lead	207	0.3598	0.3642	0.3446	**0.3562**	0.0103	2.883
Lead	208	0.3773	0.3712	0.3679	**0.3721**	0.0048	1.277
Molybdenum	95	10.65	10.63	11.38	**10.89**	0.4277	3.928
Molybdenum	97	10.71	10.67	11.03	**10.8**	0.1959	1.814
Molybdenum	98	10.95	10.76	11.13	**10.94**	0.1872	1.711
Nickel	60	5.3	5.241	5.57	**5.37**	0.1755	3.268
Nickel	62	8.694	9.314	9.177	**9.062**	0.3254	3.591
Selenium	77	3.961	3.502	4.55	**4.004**	0.5256	13.13
Selenium	78	1.21	1.057	1.11	**1.126**	0.0776	6.895
Selenium	82	0.3262	-0.0106	0.0299	**0.1151**	0.1839	159.7
Silver	107	0.1219	0.1033	0.1008	**0.1087**	0.0116	10.63
Silver	109	0.1186	0.0989	0.0995	**0.1057**	0.0112	10.62
Thallium	203	0.3005	0.2295	0.195	**0.2417**	0.0538	22.27
Thallium	205	0.2896	0.2311	0.1921	**0.2376**	0.0491	20.65
Zinc	66	5.057	5.015	5.121	**5.064**	0.0534	1.054
Zinc	67	4.955	5.179	5.275	**5.137**	0.164	3.193
Zinc	68	4.567	4.539	4.658	**4.588**	0.0622	1.355

Internal Standard Factors:

Lithium	6	1.194	1.248	1.282	**1.194**	n/a	n/a
Nickel	61	1.071	1.065	1.063	**1.071**	n/a	n/a
Gallium	71	1.077	1.067	1.086	**1.077**	n/a	n/a
Indium	115	1.053	1.038	1.068	**1.053**	n/a	n/a
Lutetium	175	0.95	0.977	0.991	**0.95**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302496-001L 1/5**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 13:59**					
Arsenic	75	2.626	2.754	2.643	**2.674**	0.0697	2.607
~~Beryllium~~	~~9~~	~~0.0033~~	~~0.0039~~	~~0.0035~~	~~**0.0036**~~	~~0.0003~~	~~7.716~~
Cadmium	111	0.0265	0.0292	0.0401	**0.0319**	0.0072	22.61
Cadmium	114	0.0367	0.0384	0.0325	**0.0359**	0.0031	8.508
Chromium	52	0.5547	0.5242	0.5275	**0.5354**	0.0167	3.126
Chromium	53	5.63	6.231	5.674	**5.845**	0.3349	5.729
Copper	63	2.435	2.511	2.495	**2.481**	0.0399	1.607
Copper	65	1.422	1.352	1.377	**1.383**	0.0359	2.593
Lead	206	0.089	0.0841	0.0874	**0.0868**	0.0025	2.872
Lead	207	0.0797	0.0789	0.0817	**0.0801**	0.0015	1.816
Lead	208	0.0882	0.0829	0.0867	**0.0859**	0.0027	3.189
Molybdenum	95	2.029	2.041	1.96	**2.01**	0.0438	2.179
Molybdenum	97	2.119	2.076	2.057	**2.084**	0.0317	1.519
Molybdenum	98	2.059	2.073	2.016	**2.05**	0.0296	1.442
Nickel	60	1.13	0.9881	0.9887	**1.035**	0.0816	7.878
Nickel	62	1.574	1.853	3.413	**2.28**	0.9911	43.47
Selenium	77	2.598	2.274	2.331	**2.401**	0.1732	7.214
Selenium	78	0.5982	0.5851	0.5651	**0.5828**	0.0167	2.858
Selenium	82	0.1024	-0.5003	-0.5003	**-0.2994**	0.348	116.2
Silver	107	0.0301	0.027	0.0301	**0.0291**	0.0018	6.116
Silver	109	0.0284	0.0308	0.0261	**0.0284**	0.0024	8.267
Thallium	203	0.066	0.0617	0.0562	**0.0613**	0.0049	7.984
Thallium	205	0.0678	0.062	0.0547	**0.0615**	0.0066	10.72
Zinc	66	1.353	1.273	1.316	**1.314**	0.0404	3.072
Zinc	67	2.119	2.074	1.912	**2.035**	0.1091	5.361
Zinc	68	1.201	1.184	1.213	**1.199**	0.0147	1.229

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Internal Standard Factors:

Lithium	6	1.03	1.041	1.044	**1.03**	n/a	n/a
Nickel	61	0.874	0.888	0.923	**0.874**	n/a	n/a
Gallium	71	0.942	0.97	0.976	**0.942**	n/a	n/a
Indium	115	0.929	0.947	0.937	**0.929**	n/a	n/a
Lutetium	175	0.917	0.923	0.941	**0.917**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302496-001A**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:03**					
Arsenic	75	34.41	34.38	34.32	**34.37**	0.0436	0.1269
~~Beryllium~~	~~9~~	~~18.22~~	~~19.51~~	~~20.63~~	~~**19.45**~~	~~1.206~~	~~6.198~~
Cadmium	111	18.32	18.69	18.99	**18.67**	0.3337	1.788
Cadmium	114	18.64	18.75	18.78	**18.73**	0.0714	0.3814
Chromium	52	22.78	23.35	22.19	**22.78**	0.5769	2.533
Chromium	53	25.53	25.27	26.32	**25.7**	0.5449	2.12
Copper	63	31.55	31.17	31.71	**31.48**	0.2769	0.8797
Copper	65	25.58	25.3	25.46	**25.45**	0.1397	0.5488
Lead	206	16.71	16.96	16.45	**16.71**	0.2556	1.529
Lead	207	16.4	16.88	16.5	**16.59**	0.2532	1.526
Lead	208	16.6	16.96	16.4	**16.65**	0.2813	1.689
Molybdenum	95	31.41	31.09	31.7	**31.4**	0.3049	0.971
Molybdenum	97	31.11	31.66	32.75	**31.84**	0.8337	2.618
Molybdenum	98	31.82	31.94	32.08	**31.95**	0.1265	0.396
Nickel	60	26.7	25.79	26.21	**26.23**	0.4584	1.747
Nickel	62	30.49	31.19	32.72	**31.46**	1.142	3.628
Selenium	77	22.14	23.14	23.59	**22.96**	0.7468	3.253
Selenium	78	20.51	20.88	21.42	**20.94**	0.4544	2.17
Selenium	82	20.12	19.88	19.74	**19.91**	0.1917	0.9627
Silver	107	17.95	18.21	18.22	**18.13**	0.152	0.8388
Silver	109	17.97	17.96	18.18	**18.04**	0.1209	0.6702
Thallium	203	16.28	16.75	16.36	**16.46**	0.2541	1.544
Thallium	205	16.24	16.88	16.46	**16.53**	0.3282	1.986
Zinc	66	22.96	22.92	22.81	**22.9**	0.075	0.3276
Zinc	67	23.83	23.86	23.27	**23.65**	0.3314	1.401
Zinc	68	22.45	22.57	22.57	**22.53**	0.0672	0.2985

Internal Standard Factors:

Lithium	6	1.319	1.341	1.428	**1.319**	n/a	n/a
Nickel	61	1.061	1.048	1.041	**1.061**	n/a	n/a
Gallium	71	1.038	1.032	1.023	**1.038**	n/a	n/a
Indium	115	1.005	1.016	1.032	**1.005**	n/a	n/a
Lutetium	175	0.956	1.005	1.015	**0.956**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302496-002**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:20**					
Arsenic	75	14.13	14.62	14.03	**14.26**	0.3166	2.22
~~Beryllium~~	~~9~~	~~-0.0038~~	~~-0.0012~~	~~-0.0025~~	~~**-0.0025**~~	~~0.0013~~	~~51.87~~
Cadmium	111	0.1369	0.1568	0.1156	**0.1365**	0.0206	15.1
Cadmium	114	0.1493	0.1514	0.1539	**0.1515**	0.0023	1.5
Chromium	52	8.939	8.62	8.463	**8.674**	0.2424	2.795
Chromium	53	21.29	18.63	16.93	**18.95**	2.194	11.58
Copper	63	12.92	13.36	13.06	**13.12**	0.2259	1.723
Copper	65	5.124	5.183	5.034	**5.114**	0.0753	1.473
Lead	206	0.3979	0.3922	0.3964	**0.3955**	0.0029	0.7457
Lead	207	0.3673	0.3535	0.3564	**0.3591**	0.0073	2.025
Lead	208	0.3858	0.3728	0.3754	**0.378**	0.0069	1.817
Molybdenum	95	10.81	10.9	10.34	**10.68**	0.2981	2.79
Molybdenum	97	10.18	10.48	10.67	**10.44**	0.2469	2.364
Molybdenum	98	10.35	10.7	10.31	**10.45**	0.2164	2.07
Nickel	60	32.33	32.65	32.82	**32.6**	0.2484	0.7618
Nickel	62	39.56	41.87	40.91	**40.78**	1.158	2.839
Selenium	77	7.949	7.352	6.994	**7.432**	0.4824	6.49
Selenium	78	1.633	1.194	1.575	**1.467**	0.2388	16.27
Selenium	82	0.2609	0.2832	0.3527	**0.2989**	0.0479	16.02
Silver	107	0.0683	0.0601	0.0636	**0.064**	0.0041	6.436
Silver	109	0.0663	0.0614	0.0586	**0.0621**	0.0039	6.276
Thallium	203	0.1522	0.1315	0.1316	**0.1384**	0.0119	8.593
Thallium	205	0.1491	0.1293	0.1307	**0.1364**	0.0111	8.136
Zinc	66	9.866	9.898	9.606	**9.79**	0.16	1.635
Zinc	67	10.5	10.14	9.342	**9.995**	0.5932	5.935
Zinc	68	9.178	8.997	8.784	**8.986**	0.197	2.192

Internal Standard Factors:

Lithium	6	1.179	1.279	1.296	**1.179**	n/a	n/a
Nickel	61	0.932	0.96	0.976	**0.932**	n/a	n/a
Gallium	71	0.948	0.984	0.982	**0.948**	n/a	n/a
Indium	115	0.894	0.948	0.969	**0.894**	n/a	n/a
Lutetium	175	0.846	0.903	0.948	**0.846**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302496-003**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:31**					
Arsenic	75	14.75	16.03	15.23	**15.34**	0.6483	4.227
~~Beryllium~~	~~9~~	~~-0.001~~	~~0.0008~~	~~0.0011~~	~~**0.0003**~~	~~0.0011~~	~~381.5~~
Cadmium	111	0.1975	0.1828	0.1771	**0.1858**	0.0105	5.674
Cadmium	114	0.1164	0.1157	0.1163	**0.1161**	0.0004	0.3388
Chromium	52	3.451	3.66	3.616	**3.576**	0.1106	3.092
Chromium	53	17.77	17.09	16.95	**17.27**	0.438	2.536
Copper	63	20.33	21.15	21.23	**20.91**	0.4999	2.391
Copper	65	10.6	11.27	11.22	**11.03**	0.3761	3.41
Lead	206	0.7186	0.6948	0.6934	**0.7022**	0.0142	2.019
Lead	207	0.6289	0.6413	0.6171	**0.6291**	0.0121	1.927
Lead	208	0.6586	0.6654	0.6634	**0.6625**	0.0035	0.5272
Molybdenum	95	10.3	10.15	9.962	**10.14**	0.1707	1.684
Molybdenum	97	10.3	10.05	10.49	**10.28**	0.2201	2.141
Molybdenum	98	9.959	10.35	10.15	**10.15**	0.1939	1.91
Nickel	60	2.48	3.021	2.794	**2.765**	0.2718	9.832
Nickel	62	6.391	8.758	4.414	**6.521**	2.175	33.35
Selenium	77	8.631	8.666	8.858	**8.718**	0.1223	1.402
Selenium	78	1.573	1.877	1.781	**1.743**	0.1554	8.912
Selenium	82	1.047	0.8798	1.17	**1.032**	0.1455	14.1
Silver	107	0.1148	0.1194	0.113	**0.1157**	0.0033	2.827
Silver	109	0.1116	0.111	0.1124	**0.1117**	0.0007	0.6401
Thallium	203	0.1128	0.1094	0.1132	**0.1118**	0.0021	1.887
Thallium	205	0.1138	0.1098	0.1098	**0.1111**	0.0023	2.104
Zinc	66	12.41	13.33	13.15	**12.96**	0.4856	3.747
Zinc	67	12.58	12.88	12.21	**12.56**	0.3322	2.645
Zinc	68	11.31	11.79	11.93	**11.68**	0.3253	2.786

Internal Standard Factors:

Lithium	6	1.367	1.389	1.428	**1.367**	n/a	n/a
Nickel	61	1.006	1.035	1.02	**1.006**	n/a	n/a
Gallium	71	1.065	1.123	1.132	**1.065**	n/a	n/a
Indium	115	1.017	1.038	1.051	**1.017**	n/a	n/a
Lutetium	175	1.017	1.028	1.059	**1.017**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-003**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:34**					
Arsenic	75	0.7297	0.526	0.7838	**0.6798**	0.136	20
~~Beryllium~~	~~9~~	~~0.1678~~	~~0.1597~~	~~0.1584~~	~~**0.162**~~	~~0.0051~~	~~3.156~~
Cadmium	111	0.0774	0.0949	0.088	**0.0868**	0.0088	10.13
Cadmium	114	0.0055	0.0086	0.0049	**0.0063**	0.002	31.35
Chromium	52	10.05	9.607	10.32	**9.99**	0.3579	3.583
Chromium	53	19.58	20.68	21.72	**20.66**	1.069	5.175
Copper	63	5.069	4.775	4.946	**4.93**	0.1476	2.993
Copper	65	1.517	1.442	1.491	**1.483**	0.0384	2.587
Lead	206	0.0687	0.0661	0.0659	**0.0669**	0.0015	2.28
Lead	207	0.0637	0.0566	0.0528	**0.0577**	0.0055	9.545
Lead	208	0.0642	0.0632	0.0618	**0.0631**	0.0012	1.915
Molybdenum	95	0.355	0.3517	0.3368	**0.3478**	0.0097	2.787
Molybdenum	97	0.3406	0.361	0.3307	**0.3441**	0.0154	4.487
Molybdenum	98	0.2623	0.2768	0.2542	**0.2644**	0.0115	4.332
Nickel	60	11.52	10.58	10.74	**10.95**	0.5026	4.592
Nickel	62	19.57	16	19.75	**18.44**	2.116	11.47
Selenium	77	5.564	5.784	5.886	**5.745**	0.1644	2.861
Selenium	78	0.9268	0.4878	0.8425	**0.7524**	0.233	30.97
Selenium	82	1.502	1.606	1.837	**1.648**	0.1717	10.42
Silver	107	0.1199	0.1184	0.1178	**0.1187**	0.0011	0.893
Silver	109	0.0402	0.0348	0.0357	**0.0369**	0.0029	7.771
Thallium	203	0.0094	0.0088	0.002	**0.0067**	0.0041	60.57
Thallium	205	0.0078	0.0063	0.0052	**0.0064**	0.0013	19.94
Zinc	66	3.414	3.579	3.746	**3.579**	0.1658	4.631
Zinc	67	10.77	10.37	10.87	**10.67**	0.2624	2.459
Zinc	68	7.772	7.546	7.745	**7.687**	0.1234	1.606

Internal Standard Factors:

Lithium	6	1.244	1.239	1.257	**1.244**	n/a	n/a
Nickel	61	1.348	1.358	1.382	**1.348**	n/a	n/a
Gallium	71	0.98	0.99	1.019	**0.98**	n/a	n/a
Indium	115	0.937	0.996	0.966	**0.937**	n/a	n/a
Lutetium	175	0.958	0.956	0.957	**0.958**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-003D**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:38**					
Arsenic	75	1.109	0.6795	1.045	**0.9446**	0.2319	24.55
~~Beryllium~~	~~9~~	~~0.1467~~	~~0.1435~~	~~0.1435~~	~~**0.1446**~~	~~0.0019~~	~~1.28~~
Cadmium	111	0.0718	0.0785	0.0705	**0.0736**	0.0043	5.798
Cadmium	114	0.0033	0.0058	0.0051	**0.0047**	0.0013	26.99
Chromium	52	9.954	9.749	10.14	**9.948**	0.1961	1.972
Chromium	53	21.59	21.34	21.89	**21.6**	0.2752	1.274
Copper	63	4.199	4.275	4.5	**4.325**	0.1561	3.61
Copper	65	0.6525	0.5858	0.6278	**0.622**	0.0338	5.427
Lead	206	0.0492	0.0502	0.0524	**0.0506**	0.0017	3.275
Lead	207	0.0368	0.0433	0.0348	**0.0383**	0.0044	11.62
Lead	208	0.0447	0.0482	0.0459	**0.0463**	0.0017	3.753
Molybdenum	95	0.3533	0.3415	0.3525	**0.3491**	0.0066	1.888
Molybdenum	97	0.3284	0.294	0.3119	**0.3114**	0.0172	5.517
Molybdenum	98	0.2736	0.2516	0.2759	**0.267**	0.0135	5.035
Nickel	60	3.48	3.596	4.184	**3.753**	0.3775	10.06
Nickel	62	8.891	7.808	10.4	**9.033**	1.301	14.41
Selenium	77	4.575	5.531	5.224	**5.11**	0.488	9.549
Selenium	78	0.6175	0.906	1.176	**0.9**	0.2795	31.05
Selenium	82	1.986	1.99	2.161	**2.046**	0.0998	4.881
Silver	107	0.0966	0.0906	0.0918	**0.093**	0.0032	3.436
Silver	109	0.0319	0.0394	0.0365	**0.0359**	0.0037	10.39
Thallium	203	0.0044	0.001	-0.0007	**0.0016**	0.0026	162.7
Thallium	205	0.0029	0.0012	0.0027	**0.0023**	0.0009	40.11
Zinc	66	0.9449	1.017	1.072	**1.011**	0.0636	6.286
Zinc	67	9.457	8.901	9.195	**9.184**	0.2783	3.03
Zinc	68	5.328	5.371	5.307	**5.335**	0.0326	0.6111

Internal Standard Factors:

Lithium	6	1.25	1.255	1.254	**1.25**	n/a	n/a
Nickel	61	1.343	1.38	1.427	**1.343**	n/a	n/a
Gallium	71	0.986	1	1.021	**0.986**	n/a	n/a
Indium	115	0.945	0.953	0.969	**0.945**	n/a	n/a
Lutetium	175	0.944	0.938	0.964	**0.944**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-003SD** 2nd 4/5/13			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:42**					
Arsenic	75	4.138	4.269	3.814	**4.074**	0.2341	5.746
~~Beryllium~~	~~9~~	~~21.32~~	~~23.34~~	~~23.27~~	~~**22.64**~~	~~1.149~~	~~5.074~~
Cadmium	111	17.52	18.57	18.16	**18.08**	0.5287	2.924
Cadmium	114	17.59	18.05	17.96	**17.87**	0.2467	1.381
Chromium	52	26.65	29.02	26.02	**27.23**	1.584	5.816
Chromium	53	37.17	39.29	35.61	**37.36**	1.848	4.947
Copper	63	23.09	24.32	22.53	**23.32**	0.9162	3.929
Copper	65	20	21.97	19.55	**20.51**	1.287	6.276
Lead	206	17.28	17.78	17.5	**17.52**	0.253	1.444
Lead	207	17.29	17.57	17.53	**17.46**	0.149	0.8532
Lead	208	17.31	17.7	17.62	**17.55**	0.209	1.191
Molybdenum	95	1.34	1.33	1.328	**1.333**	0.0063	0.4734
Molybdenum	97	1.271	1.297	1.297	**1.288**	0.0152	1.176
Molybdenum	98	1.248	1.28	1.277	**1.268**	0.0174	1.369
Nickel	60	20.77	23.13	21.87	**21.92**	1.179	5.379
Nickel	62	29.5	26.57	30.1	**28.72**	1.891	6.582
Selenium	77	24.64	26.79	23.77	**25.07**	1.555	6.204
Selenium	78	21.22	23.23	21.28	**21.91**	1.142	5.211
Selenium	82	22.51	24.04	21.73	**22.76**	1.177	5.173
Silver	107	17.8	18.45	18.15	**18.13**	0.3241	1.787
Silver	109	18.12	18.17	19.13	**18.47**	0.5721	3.097
Thallium	203	17.72	18.03	17.62	**17.79**	0.2112	1.187
Thallium	205	17.17	18.04	17.9	**17.7**	0.4704	2.658
Zinc	66	17.27	17.53	16.73	**17.18**	0.4109	2.392
Zinc	67	23.7	24.93	22.28	**23.64**	1.328	5.619
Zinc	68	19.93	21.43	20.22	**20.53**	0.793	3.863

Internal Standard Factors:

Lithium	6	1.221	1.227	1.248	**1.221**	n/a	n/a
Nickel	61	1.458	1.545	1.5	**1.458**	n/a	n/a
Gallium	71	0.986	1.042	0.964	**0.986**	n/a	n/a
Indium	115	0.91	0.928	0.943	**0.91**	n/a	n/a
Lutetium	175	0.92	0.956	0.951	**0.92**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**CCV2**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:46**					
Arsenic	75	25.58	24.1	24.82	**24.84**	0.7439	2.995
Beryllium	9	32.01	34	31.17	**32.39**	1.452	4.482
Cadmium	111	24.64	24.15	24.66	**24.48**	0.2874	1.174
Cadmium	114	24.25	24.92	24.53	**24.57**	0.3357	1.366
Chromium	52	24.93	23.64	24.24	**24.27**	0.6465	2.664
Chromium	53	33.98	32.61	33.99	**33.53**	0.796	2.374
Copper	63	27.78	26.42	27.14	**27.11**	0.6828	2.518
Copper	65	26.3	25.59	26.81	**26.23**	0.6118	2.332
Lead	206	26.4	26.89	27.04	**26.78**	0.3388	1.265
Lead	207	25.92	26.53	26.52	**26.32**	0.3483	1.323
Lead	208	26.19	26.53	26.82	**26.51**	0.3192	1.204
Molybdenum	95	21.66	22.67	22.62	**22.32**	0.5703	2.556
Molybdenum	97	21.52	21.64	22.58	**21.92**	0.5809	2.651
Molybdenum	98	22.3	22.1	22.65	**22.35**	0.2796	1.251
Nickel	60	24.89	24.95	24.53	**24.79**	0.2268	0.9148
Nickel	62	26.13	28.36	27.2	**27.23**	1.114	4.092
Selenium	77	31.71	28.79	31.49	**30.66**	1.627	5.307
Selenium	78	26.96	27.15	26.55	**26.89**	0.307	1.142
Selenium	82	27.88	26.27	27.11	**27.09**	0.8046	2.97
Silver	107	25.81	25.41	26.32	**25.85**	0.459	1.776
Silver	109	25.13	25.67	26.42	**25.74**	0.6477	2.516
Thallium	203	25.92	26.38	27.1	**26.47**	0.596	2.252
Thallium	205	26.23	26.6	27.51	**26.78**	0.6576	2.456
Zinc	66	26.6	24.88	25.5	**25.66**	0.8715	3.397
Zinc	67	26.13	25.75	26.26	**26.05**	0.2659	1.021
Zinc	68	26.42	25.27	25.67	**25.79**	0.5844	2.266

Be out of control see memo

Internal Standard Factors:

Lithium	6	1.127	1.118	1.114	**1.127**	n/a	n/a
Nickel	61	0.805	0.819	0.811	**0.805**	n/a	n/a
Gallium	71	0.926	0.9	0.943	**0.926**	n/a	n/a
Indium	115	0.847	0.857	0.889	**0.847**	n/a	n/a
Lutetium	175	0.916	0.931	0.95	**0.916**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**CCB2**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:50**					
Arsenic	75	-0.3154	-0.4728	-0.2969	**-0.3617**	0.0967	26.73
Beryllium	9	0.0062	0.0163	0.0114	**0.0113**	0.0051	44.79
Cadmium	111	0.022	0.0192	0.0211	**0.0208**	0.0015	7.047
Cadmium	114	0.0082	0.0065	0.0081	**0.0076**	0.0009	12.46
Chromium	52	0.5437	0.4564	0.6044	**0.5348**	0.0744	13.91
Chromium	53	9.204	7.849	9.489	**8.847**	0.8762	9.904
Copper	63	0.5089	0.4754	0.5758	**0.52**	0.0512	9.836
Copper	65	-0.1002	-0.1143	-0.1006	**-0.105**	0.008	7.657
Lead	206	0.0056	0.0084	0.0137	**0.0093**	0.0041	44.57
Lead	207	0.0046	0.0106	0.0063	**0.0072**	0.0031	42.84
Lead	208	0.0081	0.0118	0.0111	**0.0103**	0.002	19.16
Molybdenum	95	0.0325	0.0251	0.0179	**0.0252**	0.0073	28.83
Molybdenum	97	0.0312	0.029	0.0211	**0.0271**	0.0053	19.61
Molybdenum	98	0.0369	0.018	0.0142	**0.023**	0.0122	52.98
Nickel	60	0.1881	0.5988	0.1581	**0.315**	0.2462	78.17
Nickel	62	3.521	1.717	2.754	**2.664**	0.9055	33.99
Selenium	77	3.43	3.302	4.249	**3.66**	0.514	14.04
Selenium	78	-0.1584	-0.4377	-0.0042	**-0.2001**	0.2197	109.8
Selenium	82	-0.6246	-0.7165	-0.8968	**-0.7459**	0.1385	18.57
Silver	107	0.0334	0.0328	0.0274	**0.0312**	0.0033	10.57
Silver	109	0.0325	0.0323	0.0236	**0.0295**	0.0051	17.27
Thallium	203	0.0182	0.018	0.0171	**0.0178**	0.0006	3.449
Thallium	205	0.0184	0.0182	0.0167	**0.0178**	0.001	5.403
Zinc	66	-0.1527	-0.1686	-0.132	**-0.1511**	0.0184	12.16
Zinc	67	0.2839	0.1521	0.2605	**0.2322**	0.0704	30.3
Zinc	68	0.0237	0.0355	0.0496	**0.0362**	0.013	35.73

Internal Standard Factors:

Lithium	6	1.038	1.052	1.066	**1.038**	n/a	n/a
Nickel	61	0.877	0.906	0.893	**0.877**	n/a	n/a
Gallium	71	0.91	0.895	0.962	**0.91**	n/a	n/a
Indium	115	0.88	0.88	0.868	**0.88**	n/a	n/a
Lutetium	175	0.913	0.899	0.917	**0.913**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**LLCCVW1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:53**					
Arsenic	75	4.38	4.5	4.739	**4.54**	0.183	4.031
Beryllium	9	0.2195	0.2294	0.2311	**0.2267**	0.0063	2.764
Cadmium	111	0.1852	0.1936	0.1904	**0.1897**	0.0042	2.223
Cadmium	114	0.204	0.1933	0.1932	**0.1968**	0.0062	3.158
Chromium	52	2.149	2.286	2.103	**2.179**	0.0954	4.375
Chromium	53	10.19	10.59	10.91	**10.56**	0.361	3.418
Copper	63	1.529	1.602	1.541	**1.557**	0.0394	2.528
Copper	65	0.9368	0.9348	0.8973	**0.923**	0.0223	2.414
Lead	206	0.23	0.2199	0.2135	**0.2211**	0.0083	3.752
Lead	207	0.1984	0.213	0.1999	**0.2037**	0.008	3.939
Lead	208	0.2183	0.2184	0.2123	**0.2163**	0.0035	1.603
Molybdenum	95	0.44	0.4434	0.3977	**0.4271**	0.0255	5.959
Molybdenum	97	0.4365	0.4539	0.4423	**0.4442**	0.0089	1.998
Molybdenum	98	0.4223	0.4341	0.4118	**0.4227**	0.0112	2.638
Nickel	60	2.616	2.145	2.422	**2.394**	0.2363	9.868
Nickel	62	7.062	2.283	3.877	**4.407**	2.433	55.21
Selenium	77	13.22	12.83	12.21	**12.76**	0.5104	4.001
Selenium	78	10.22	9.606	9.892	**9.906**	0.3064	3.093
Selenium	82	9.164	8.974	8.945	**9.028**	0.1193	1.322
Silver	107	0.2016	0.2108	0.2063	**0.2062**	0.0046	2.211
Silver	109	0.2021	0.2093	0.1989	**0.2034**	0.0054	2.64
Thallium	203	0.2201	0.2214	0.2153	**0.2189**	0.0032	1.477
Thallium	205	0.2182	0.2229	0.2095	**0.2169**	0.0068	3.142
Zinc	66	4.592	4.558	4.589	**4.579**	0.019	0.4154
Zinc	67	4.496	4.626	4.438	**4.52**	0.0961	2.125
Zinc	68	4.59	4.463	4.482	**4.511**	0.0684	1.516

Internal Standard Factors:

Lithium	6	1.008	1.029	1.04	**1.008**	n/a	n/a
Nickel	61	0.892	0.903	0.888	**0.892**	n/a	n/a
Gallium	71	0.933	0.959	0.952	**0.933**	n/a	n/a
Indium	115	0.887	0.915	0.904	**0.887**	n/a	n/a
Lutetium	175	0.926	0.939	0.91	**0.926**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-001**				**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 14:57**						
Arsenic	75	9/5/17	0.0677	0.3291	-0.1895	**0.0691**	0.2593	375.2
~~Beryllium~~	~~9~~	~~BJ~~	~~0.0195~~	~~0.0177~~	~~0.025~~	~~**0.0207**~~	~~0.0038~~	~~18.29~~
Cadmium	111		0.0761	0.0847	0.0784	**0.0797**	0.0044	5.57
Cadmium	114		0.0179	0.0149	0.0151	**0.016**	0.0017	10.56
Chromium	52		2.101	2.041	2.261	**2.134**	0.1139	5.336
Chromium	53		14.09	13.82	15.08	**14.33**	0.6658	4.646
Copper	63		8.269	8.354	8.82	**8.481**	0.2965	3.496
Copper	65		4.13	3.96	4.25	**4.113**	0.146	3.55
Lead	206		0.119	0.132	0.1201	**0.1237**	0.0072	5.829
Lead	207		0.1137	0.1186	0.1151	**0.1158**	0.0025	2.201
Lead	208		0.1177	0.1286	0.1205	**0.1223**	0.0057	4.632
Molybdenum	95		4.382	4.518	4.516	**4.472**	0.0779	1.742
Molybdenum	97		4.279	4.581	4.288	**4.382**	0.1719	3.922
Molybdenum	98		4.631	4.554	4.311	**4.499**	0.1674	3.72
Nickel	60		15.17	14.24	15.5	**14.97**	0.6552	4.376
Nickel	62		20.29	20.17	19.68	**20.04**	0.3207	1.6
Selenium	77		5.449	4.495	6.539	**5.494**	1.023	18.62
Selenium	78		0.5251	0.5093	0.8753	**0.6366**	0.2069	32.51
Selenium	82		0.5385	0.568	0.0544	**0.387**	0.2884	74.52
Silver	107		0.0443	0.0472	0.0455	**0.0457**	0.0015	3.233
Silver	109		0.0419	0.041	0.0394	**0.0408**	0.0013	3.082
Thallium	203		-0.0011	-0.0001	-0.0003	**-0.0005**	0.0006	109.7
Thallium	205		0.0009	0.0015	0.0004	**0.0009**	0.0006	58.76
Zinc	66		9.955	10.1	10.69	**10.25**	0.3868	3.775
Zinc	67		11.52	11.01	11.89	**11.47**	0.4455	3.883
Zinc	68		10.42	9.935	10.82	**10.4**	0.4455	4.286

Be out of control

Internal Standard Factors:

Lithium	6	1.142	1.171	1.179	**1.142**	n/a	n/a
Nickel	61	0.947	0.976	0.975	**0.947**	n/a	n/a
Gallium	71	1.035	1.034	1.084	**1.035**	n/a	n/a
Indium	115	0.983	1.018	0.998	**0.983**	n/a	n/a
Lutetium	175	0.915	0.935	0.924	**0.915**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-002**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 15:01**					
Arsenic	75	1.994	2.172	1.925	**2.03**	0.1273	6.269
~~Beryllium~~	~~9~~	~~0.1066~~	~~0.1052~~	~~0.091~~	~~**0.1009**~~	~~0.0087~~	~~8.586~~
Cadmium	111	0.0582	0.0603	0.0536	**0.0574**	0.0035	6.038
Cadmium	114	0.0107	0.0116	0.0084	**0.0102**	0.0016	15.94
Chromium	52	4.995	4.997	4.752	**4.915**	0.141	2.87
Chromium	53	15	15.85	14.04	**14.96**	0.906	6.055
Copper	63	7.441	8.125	7.892	**7.819**	0.3475	4.444
Copper	65	1.895	1.957	1.906	**1.919**	0.0331	1.724
Lead	206	0.1325	0.1315	0.1256	**0.1299**	0.0038	2.89
Lead	207	0.123	0.1099	0.1193	**0.1174**	0.0068	5.766
Lead	208	0.1243	0.1239	0.1245	**0.1242**	0.0003	0.2554
Molybdenum	95	0.5831	0.5568	0.5772	**0.5724**	0.0138	2.405
Molybdenum	97	0.6307	0.6145	0.6247	**0.6233**	0.0082	1.312
Molybdenum	98	0.5288	0.5122	0.5092	**0.5167**	0.0106	2.043
Nickel	60	4.369	4.645	3.402	**4.139**	0.6526	15.77
Nickel	62	8.029	7.112	1.879	**5.673**	3.318	58.49
Selenium	77	9.09	9.461	9.603	**9.385**	0.2649	2.822
Selenium	78	1.154	1.291	1.245	**1.23**	0.0697	5.666
Selenium	82	4.33	4.607	4.421	**4.453**	0.1413	3.174
Silver	107	0.0711	0.0738	0.0687	**0.0712**	0.0025	3.528
Silver	109	0.0355	0.026	0.0277	**0.0297**	0.005	16.98
Thallium	203	0.0001	0.0011	0.0002	**0.0004**	0.0006	130.4
Thallium	205	0.0012	0	0.0005	**0.0006**	0.0006	98.88
Zinc	66	8.391	8.695	8.63	**8.572**	0.1603	1.87
Zinc	67	85.74	89.04	83.22	**86**	2.918	3.393
Zinc	68	64.49	70.8	68.82	**68.04**	3.224	4.739

Internal Standard Factors:

Lithium	6	1.321	1.35	1.376	**1.321**	n/a	n/a
Nickel	61	1.096	1.092	1.014	**1.096**	n/a	n/a
Gallium	71	1.049	1.095	1.056	**1.049**	n/a	n/a
Indium	115	1.029	1.013	1.014	**1.029**	n/a	n/a
Lutetium	175	0.971	0.98	0.98	**0.971**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-004**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 15:04**					
Arsenic	75	3.452	3.571	2.983	**3.335**	0.311	9.324
~~Beryllium~~	~~9~~	~~0.2171~~	~~0.1873~~	~~0.2128~~	~~**0.2057**~~	~~0.0161~~	~~7.818~~
Cadmium	111	0.1344	0.1264	0.1192	**0.1266**	0.0076	6.007
Cadmium	114	0.0303	0.0306	0.0348	**0.0319**	0.0025	7.859
Chromium	52	11.65	11.49	11.12	**11.42**	0.2705	2.369
Chromium	53	26.4	26.8	24.47	**25.89**	1.246	4.815
Copper	63	15.42	16.25	15.69	**15.79**	0.4273	2.707
Copper	65	2.091	2.083	1.958	**2.044**	0.0744	3.642
Lead	206	0.0541	0.0468	0.049	**0.05**	0.0037	7.482
Lead	207	0.0472	0.0478	0.04	**0.045**	0.0043	9.639
Lead	208	0.0491	0.0515	0.0476	**0.0494**	0.002	3.972
Molybdenum	95	2.322	2.278	2.277	**2.293**	0.0257	1.122
Molybdenum	97	2.402	2.33	2.299	**2.344**	0.0529	2.256
Molybdenum	98	2.158	2.076	2.14	**2.125**	0.0431	2.031
Nickel	60	8.819	8.582	8.296	**8.566**	0.2621	3.059
Nickel	62	6.548	3.272	4.559	**4.793**	1.65	34.43
Selenium	77	24.66	23.79	24.26	**24.24**	0.4332	1.787
Selenium	78	2.002	1.433	2.037	**1.824**	0.3394	18.61
Selenium	82	11.53	11.43	10.98	**11.31**	0.2912	2.573
Silver	107	0.5857	0.5812	0.5863	**0.5844**	0.0028	0.4795
Silver	109	0.0515	0.045	0.0497	**0.0487**	0.0034	6.896
Thallium	203	0.0021	0.0019	0.0016	**0.0019**	0.0003	13.77
Thallium	205	0.0016	0.0017	0.0032	**0.0022**	0.0009	42.21
Zinc	66	13.72	14.2	14.12	**14.01**	0.2552	1.821
Zinc	67	87.96	85.21	87.26	**86.81**	1.43	1.647
Zinc	68	66.64	69.9	67.18	**67.91**	1.75	2.577

4/15/17

only Be is corrected by Li.6

Internal Standard Factors:

Lithium	6	1.769	1.758	1.777	**1.769**	n/a	n/a
Nickel	61	1.3	1.261	1.271	**1.3**	n/a	n/a
Gallium	71	1.169	1.183	1.166	**1.169**	n/a	n/a
Indium	115	1.175	1.178	1.195	**1.175**	n/a	n/a
Lutetium	175	1.202	1.214	1.239	**1.202**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-005**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 15:08**					
Arsenic	75	3.334	3.101	3.023	**3.153**	0.1615	5.124
~~Beryllium~~	~~9~~	~~0.1908~~	~~0.2094~~	~~0.2076~~	~~**0.2026**~~	~~0.0102~~	~~5.051~~
Cadmium	111	0.0971	0.105	0.1127	**0.1049**	0.0078	7.437
Cadmium	114	0.0164	0.0277	0.0241	**0.0227**	0.0058	25.52
Chromium	52	10.87	11.25	10.76	**10.96**	0.2566	2.341
Chromium	53	25.04	24.72	23.84	**24.53**	0.6219	2.535
Copper	63	16.93	18.11	17.41	**17.48**	0.5907	3.379
Copper	65	2.693	2.779	2.634	**2.702**	0.0725	2.683
Lead	206	0.125	0.1189	0.1138	**0.1192**	0.0056	4.728
Lead	207	0.1115	0.1024	0.1114	**0.1084**	0.0052	4.821
Lead	208	0.1175	0.1119	0.1133	**0.1142**	0.0029	2.523
Molybdenum	95	2.243	2.25	2.223	**2.238**	0.0139	0.6199
Molybdenum	97	2.372	2.414	2.345	**2.377**	0.0345	1.453
Molybdenum	98	2.136	2.128	2.114	**2.126**	0.0115	0.539
Nickel	60	10.78	10.16	10.3	**10.41**	0.321	3.083
Nickel	62	9.987	14.45	11.79	**12.07**	2.244	18.59
Selenium	77	22.03	21.83	20.06	**21.31**	1.088	5.105
Selenium	78	2.122	2.46	2.51	**2.364**	0.2111	8.931
Selenium	82	11.02	9.617	9.114	**9.918**	0.9889	9.971
Silver	107	0.5744	0.6022	0.5513	**0.576**	0.0255	4.428
Silver	109	0.0483	0.0534	0.0453	**0.049**	0.0041	8.35
Thallium	203	0.0007	-0.0027	-0.0013	**-0.0011**	0.0017	152.9
Thallium	205	-0.0028	-0.0013	-0.0019	**-0.002**	0.0007	37.8
Zinc	66	22.77	23.68	22.41	**22.95**	0.6561	2.858
Zinc	67	91.34	92.29	89.05	**90.89**	1.666	1.833
Zinc	68	74.46	74.79	71.75	**73.67**	1.671	2.269

Internal Standard Factors:

Lithium	6	1.754	1.782	1.8	**1.754**	n/a	n/a
Nickel	61	1.305	1.318	1.298	**1.305**	n/a	n/a
Gallium	71	1.181	1.204	1.157	**1.181**	n/a	n/a
Indium	115	1.185	1.19	1.181	**1.185**	n/a	n/a
Lutetium	175	1.236	1.211	1.209	**1.236**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-006**				**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 15:12**						
Arsenic	75	4/15/13	0.7097	1.064	1.314	**1.029**	0.3034	29.49
~~Beryllium~~	~~9~~		~~0.0992~~	~~0.103~~	~~0.1055~~	~~**0.1025**~~	~~0.0032~~	~~3.092~~
Cadmium	111		0.0759	0.0825	0.0808	**0.0797**	0.0034	4.276
Cadmium	114		0.0108	0.0081	0.0137	**0.0108**	0.0028	25.78
Chromium	52		6.363	6.638	6.59	**6.53**	0.1468	2.248
Chromium	53		19.4	22.38	23.21	**21.66**	2.001	9.238
Copper	63		9.73	9.35	9.647	**9.576**	0.2001	2.089
Copper	65		1.322	1.392	1.413	**1.376**	0.0474	3.444
Lead	206		0.1012	0.1077	0.1008	**0.1032**	0.0039	3.731
Lead	207		0.0894	0.1058	0.0932	**0.0961**	0.0086	8.948
Lead	208		0.0985	0.1053	0.0968	**0.1002**	0.0045	4.486
Molybdenum	95		0.2059	0.2058	0.1975	**0.2031**	0.0048	2.373
Molybdenum	97		0.3189	0.2833	0.2864	**0.2962**	0.0197	6.654
Molybdenum	98		0.1704	0.1598	0.1557	**0.162**	0.0076	4.676
Nickel	60		8.558	8.134	8.178	**8.29**	0.2331	2.811
Nickel	62		32.55	31.21	26.88	**30.21**	2.964	9.812
Selenium	77		7.559	7.673	7.519	**7.584**	0.0795	1.049
Selenium	78		1.65	1.332	1.502	**1.495**	0.159	10.64
Selenium	82		2.879	3.685	4.341	**3.635**	0.7325	20.15
Silver	107		0.0896	0.0891	0.081	**0.0865**	0.0048	5.574
Silver	109		0.0368	0.0392	0.0335	**0.0365**	0.0028	7.74
Thallium	203		-0.0004	0.0006	0.0003	**0.0002**	0.0005	288
Thallium	205		0.0006	0.0022	0.0023	**0.0017**	0.0009	55.81
Zinc	66		6.777	7.259	7.249	**7.095**	0.2752	3.879
Zinc	67		9.752	9.964	10.46	**10.06**	0.3641	3.62
Zinc	68		8.216	8.501	8.417	**8.378**	0.1467	1.751

Internal Standard Factors:

Lithium	6	1.395	1.404	1.415	**1.395**	n/a	n/a
Nickel	61	1.963	1.956	1.97	**1.963**	n/a	n/a
Gallium	71	1.054	1.086	1.103	**1.054**	n/a	n/a
Indium	115	1.031	1.05	1.068	**1.031**	n/a	n/a
Lutetium	175	0.983	1.037	1.009	**0.983**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-007**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 15:15**					
Arsenic	75	1.117	1.035	1.011	**1.054**	0.0555	5.26
~~Beryllium~~	~~9~~	~~0.0238~~	~~0.0308~~	~~0.0313~~	~~**0.0287**~~	~~0.0042~~	~~14.55~~
Cadmium	111	0.1004	0.0907	0.0975	**0.0962**	0.005	5.154
Cadmium	114	0.0213	0.0226	0.0179	**0.0206**	0.0025	11.92
Chromium	52	2.479	2.61	2.551	**2.547**	0.0656	2.577
Chromium	53	19.4	20.39	22.12	**20.64**	1.38	6.689
Copper	63	2.67	2.567	2.522	**2.586**	0.0758	2.93
Copper	65	1.502	1.503	1.505	**1.503**	0.0017	0.1114
Lead	206	0.4144	0.4148	0.3883	**0.4059**	0.0152	3.744
Lead	207	0.3702	0.3752	0.3435	**0.363**	0.017	4.689
Lead	208	0.3909	0.39	0.3736	**0.3848**	0.0097	2.533
Molybdenum	95	2.21	2.307	2.317	**2.278**	0.059	2.589
Molybdenum	97	2.252	2.332	2.245	**2.276**	0.0484	2.124
Molybdenum	98	2.334	2.261	2.36	**2.318**	0.0516	2.225
Nickel	60	8.472	8.451	8.64	**8.521**	0.1036	1.216
Nickel	62	12.29	17.22	14.3	**14.61**	2.483	17
Selenium	77	3.658	4.265	4.204	**4.042**	0.3339	8.259
Selenium	78	0.3766	0.0431	0.3269	**0.2489**	0.1799	72.3
Selenium	82	-0.3619	-0.5589	-0.7977	**-0.5728**	0.2182	38.1
Silver	107	0.0519	0.05	0.0524	**0.0515**	0.0013	2.489
Silver	109	0.0358	0.0392	0.0332	**0.0361**	0.003	8.357
Thallium	203	-0.003	-0.0015	-0.0024	**-0.0023**	0.0007	31.01
Thallium	205	0.0011	-0.0001	-0.0011	**0**	0.0011	3558
Zinc	66	6.715	6.791	6.845	**6.784**	0.0651	0.9596
Zinc	67	13.58	13.42	13.47	**13.49**	0.0839	0.6219
Zinc	68	9.918	9.874	9.728	**9.84**	0.0992	1.008

Internal Standard Factors:

Lithium	6	1.172	1.169	1.148	**1.172**	n/a	n/a
Nickel	61	0.856	0.868	0.878	**0.856**	n/a	n/a
Gallium	71	0.896	0.904	0.918	**0.896**	n/a	n/a
Indium	115	0.866	0.879	0.879	**0.866**	n/a	n/a
Lutetium	175	0.896	0.904	0.887	**0.896**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**K1302526-008**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 15:19**					
Arsenic	75	0.1263	0.019	0.1901	**0.1118**	0.0865	77.37
~~Beryllium~~	~~9~~	~~0.0525~~	~~0.0431~~	~~0.0527~~	~~**0.0494**~~	~~0.0055~~	~~11.15~~
Cadmium	111	0.0726	0.0823	0.0766	**0.0772**	0.0049	6.321
Cadmium	114	0.0116	0.0137	0.0097	**0.0117**	0.002	17.52
Chromium	52	3.485	3.566	3.242	**3.431**	0.169	4.925
Chromium	53	22.95	23.32	22.21	**22.83**	0.5679	2.488
Copper	63	2.461	2.566	2.355	**2.461**	0.1056	4.29
Copper	65	1.606	1.619	1.581	**1.602**	0.0193	1.206
Lead	206	0.1452	0.1442	0.1496	**0.1463**	0.0029	1.977
Lead	207	0.1299	0.1351	0.1331	**0.1327**	0.0027	2.009
Lead	208	0.1395	0.141	0.1402	**0.1402**	0.0007	0.5327
Molybdenum	95	0.1188	0.1249	0.1208	**0.1215**	0.0031	2.554
Molybdenum	97	0.0863	0.0598	0.0649	**0.0703**	0.0141	19.99
Molybdenum	98	0.0588	0.0606	0.0496	**0.0563**	0.0059	10.54
Nickel	60	7.707	6.693	6.45	**6.95**	0.6668	9.594
Nickel	62	13.25	8.811	7.571	**9.878**	2.988	30.25
Selenium	77	3.258	4	2.668	**3.309**	0.6674	20.17
Selenium	78	0.2177	0.2388	0.0598	**0.1721**	0.0978	56.83
Selenium	82	-0.529	-0.346	-0.5258	**-0.4669**	0.1047	22.43
Silver	107	0.0458	0.0462	0.0449	**0.0456**	0.0007	1.506
Silver	109	0.0326	0.0353	0.0327	**0.0335**	0.0015	4.539
Thallium	203	0.0012	-0.0001	0.0008	**0.0006**	0.0006	99.06
Thallium	205	0.004	0.0021	0.0019	**0.0027**	0.0011	42.42
Zinc	66	4.913	5.096	4.69	**4.9**	0.2034	4.151
Zinc	67	9.314	9.636	9.203	**9.384**	0.225	2.398
Zinc	68	6.077	5.911	5.475	**5.821**	0.3107	5.338

Internal Standard Factors:

Lithium	6	1.15	1.169	1.169	**1.15**	n/a	n/a
Nickel	61	0.883	0.855	0.841	**0.883**	n/a	n/a
Gallium	71	0.901	0.936	0.895	**0.901**	n/a	n/a
Indium	115	0.868	0.896	0.883	**0.868**	n/a	n/a
Lutetium	175	0.888	0.897	0.907	**0.888**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**CCV3**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 15:23**					
Arsenic	75	26	24.24	26.26	**25.5**	1.098	4.306
Beryllium	9	31.96	30.34	32.14	**31.48**	0.991	3.148
Cadmium	111	24.4	24.6	24.28	**24.43**	0.1597	0.6537
Cadmium	114	25.07	25.77	25.05	**25.3**	0.4107	1.623
Chromium	52	25.99	24.81	25.98	**25.6**	0.6779	2.649
Chromium	53	41.49	38.23	39.02	**39.58**	1.7	4.295
Copper	63	27.5	26.97	27.67	**27.38**	0.3615	1.321
Copper	65	26.46	25.92	27.44	**26.61**	0.7737	2.908
Lead	206	27.37	26.85	26.33	**26.85**	0.5191	1.934
Lead	207	27.01	25.98	26.48	**26.49**	0.5139	1.94
Lead	208	27.22	26.69	26.6	**26.84**	0.3375	1.258
Molybdenum	95	21.96	21.81	22.07	**21.94**	0.1341	0.6109
Molybdenum	97	22.56	22.21	22.56	**22.44**	0.2012	0.8965
Molybdenum	98	22.63	22.94	22.79	**22.78**	0.154	0.6759
Nickel	60	24.31	24.15	26.93	**25.13**	1.561	6.211
Nickel	62	31.32	27.71	30.92	**29.98**	1.982	6.61
Selenium	77	31.14	30.04	31.87	**31.02**	0.9233	2.977
Selenium	78	27.11	25.64	27.39	**26.71**	0.9398	3.518
Selenium	82	26.67	25.53	27.07	**26.42**	0.7996	3.026
Silver	107	25.93	25.31	25.94	**25.73**	0.3619	1.407
Silver	109	26.25	26.29	26.44	**26.33**	0.102	0.3873
Thallium	203	26.94	26.44	26.07	**26.48**	0.4397	1.66
Thallium	205	27.26	26.71	26.55	**26.84**	0.3719	1.386
Zinc	66	25.22	23.88	25.87	**24.99**	1.011	4.044
Zinc	67	28.13	26.22	27.58	**27.31**	0.9801	3.589
Zinc	68	26.48	24.8	25.86	**25.71**	0.8469	3.294

Internal Standard Factors:

Lithium	6	1.127	1.133	1.167	**1.127**	n/a	n/a
Nickel	61	0.826	0.833	0.835	**0.826**	n/a	n/a
Gallium	71	0.955	0.936	0.951	**0.955**	n/a	n/a
Indium	115	0.892	0.91	0.895	**0.892**	n/a	n/a
Lutetium	175	0.953	0.945	0.934	**0.953**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-05-13A
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #335178

Sample Name:		**CCB3**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/5/13 15:26**					
Arsenic	75	-0.4249	-0.4416	-0.3453	**-0.4039**	0.0515	12.75
Beryllium	9	0.0134	0.0105	0.0087	**0.0109**	0.0024	22.02
Cadmium	111	0.0279	0.0162	0.0147	**0.0196**	0.0072	36.85
Cadmium	114	0.0054	0.0081	0.0041	**0.0059**	0.002	34.44
Chromium	52	0.9184	0.9238	0.8504	**0.8975**	0.0409	4.558
Chromium	53	14.12	13.88	13.8	**13.93**	0.1687	1.211
Copper	63	0.7324	0.6961	0.6663	**0.6983**	0.0332	4.747
Copper	65	-0.1052	-0.1056	-0.105	**-0.1053**	0.0003	0.3139
Lead	206	0.0135	0.0044	0.0099	**0.0093**	0.0046	49.71
Lead	207	0.0106	0.0062	-0.0016	**0.0051**	0.0062	121.7
Lead	208	0.0127	0.0067	0.0083	**0.0092**	0.0031	33.61
Molybdenum	95	0.0581	0.028	0.0187	**0.0349**	0.0206	59.08
Molybdenum	97	0.0526	0.0247	0.0112	**0.0295**	0.0211	71.47
Molybdenum	98	0.0572	0.0294	0.0206	**0.0358**	0.0191	53.4
Nickel	60	0.2315	0.3087	0.3842	**0.3081**	0.0763	24.77
Nickel	62	-0.3711	2.518	2.569	**1.572**	1.683	107.1
Selenium	77	4.325	4.693	4.28	**4.433**	0.2265	5.11
Selenium	78	0.0375	0.2403	0.1236	**0.1338**	0.1018	76.1
Selenium	82	-0.9643	-0.8865	-0.6024	**-0.8177**	0.1905	23.3
Silver	107	0.0469	0.0319	0.0293	**0.036**	0.0095	26.43
Silver	109	0.045	0.0307	0.0235	**0.0331**	0.0109	33.07
Thallium	203	0.0194	0.01	0.0137	**0.0144**	0.0047	32.9
Thallium	205	0.02	0.0117	0.011	**0.0142**	0.005	34.91
Zinc	66	-0.1575	-0.1461	-0.1356	**-0.1464**	0.011	7.48
Zinc	67	1.228	1.082	0.98	**1.096**	0.1246	11.36
Zinc	68	0.0367	0.0657	0.057	**0.0531**	0.0149	28

Internal Standard Factors:

Lithium	6	1.1	1.141	1.134	**1.1**	n/a	n/a
Nickel	61	0.835	0.866	0.872	**0.835**	n/a	n/a
Gallium	71	0.909	0.93	0.925	**0.909**	n/a	n/a
Indium	115	0.864	0.907	0.899	**0.864**	n/a	n/a
Lutetium	175	0.935	0.902	0.914	**0.935**	n/a	n/a

May 3, 2013 Analytical Report for Service Request No: K1303535

Roger McGinnis
Hart Crowser, Incorporated
1700 Westlake Avenue North
Suite 200
Seattle, WA 98109-3056

RE: Sitcum Waterway/17472-01

Dear Roger:

Enclosed are the results of the samples submitted to our laboratory on April 18, 2013. For your reference, these analyses have been assigned our service request number K1303535.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at Lisa.Domenighini@alsglobal.com.

Respectfully submitted,

ALS Group USA Corp. dba ALS Environmental

Lisa A Domenighini

Lisa Domenighini
Project Manager

LD/mj

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626 USA PHONE +1 360 577 7222 FAX +1 360 636 1068
Columbia Analytical Services, Inc. Part of the ALS Group An ALS Limited Company

Environmental www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

* The result is an outlier. See case narrative.

\# The control limit criteria is not applicable. See case narrative.

B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.

E The result is an estimate amount because the value exceeded the instrument calibration range.

J The result is an estimated value.

U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.

i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.

X See case narrative.

Q See case narrative. One or more quality control criteria was outside the limits.

H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

\# The control limit criteria is not applicable. See case narrative.

J The result is an estimated value.

E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.

M The duplicate injection precision was not met.

N The Matrix Spike sample recovery is not within control limits. See case narrative.

S The reported value was determined by the Method of Standard Additions (MSA).

U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.

W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.

X See case narrative.

\+ The correlation coefficient for the MSA is less than 0.995.

Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

* The result is an outlier. See case narrative.

\# The control limit criteria is not applicable. See case narrative.

A A tentatively identified compound, a suspected aldol-condensation product.

B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.

C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.

D The reported result is from a dilution.

E The result is an estimated value.

J The result is an estimated value.

N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.

P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.

U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.

i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.

X See case narrative.

Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.

L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.

H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.

O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.

Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.

Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	1704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS ENVIRONMENTAL

Client:	Hart Crowser, Incorporated	**Service Request No.:**	K1303535
Project:	Sitcum Waterway/ 17472-01	**Date Received:**	04/18/13
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eight water samples were received for analysis at ALS Environmental on 04/18/13. The samples were received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Dissolved Metals

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Arsenic for sample MW-5 was outside control criteria for the reductive precipitation procedure (22% versus a lower control limit of 50%). Certain matrix components can interfere with the procedure's reaction mechanism resulting in low recoveries. As a result of the interference, the reported values for this analyte may contain a low bias. The associated QA/QC results (i.e. Method Blank, LCSW, CCV, etc.) indicate the analysis was in control. No further corrective action was taken.

No other anomalies associated with the analysis of these samples were observed.

Approved by Lisa Alfonsenigue

Chain of Custody

CHAIN OF CUSTODY

ALS Environmental

1317 South 13th Ave., Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR# K1303535

PAGE 1 OF 1 COC#

PROJECT NAME: Sitcum Waterway
PROJECT NUMBER: 17472-01
PROJECT MANAGER: Roger McGinnis
COMPANY NAME: Hart Crowser
ADDRESS: 1700 Westlake Ave N #200
CITY/STATE/ZIP: Seattle, WA 98109
E-MAIL ADDRESS: roger.mcginnis@hartcrowser.com
PHONE #: 206-324-9530 FAX #:
SAMPLER'S SIGNATURE: Brian Payne

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐ SIM PAH☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCBs Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS, Turb.	(circle) NH3-N, COD, TKN, TOC, DOC, NO2+NO3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity☐ CO3☐ HCO3☐	Dioxins/Furans 1613☐ 8290☐	Dissolved Gases RSK 175☐ Methane☐ Ethane☐ Ethene☐ CO2☐				REMARKS
MW-1	4/16/13	1045		Water	2									X											All samples
MW-1a	4/16/13	0952		↓	2									↓											have been
MW-5	4/16/13	1216			6																				field-
MW-15	4/16/13	1226			2																				filtered
MW-7	4/16/13	1258			2																				
MW-10	4/16/13	1420			2																				
MW-12	4/16/13	1338			2																				
MW-14	4/16/13	1141		↓	2									↓											↓

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
___ Standard (15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Triple volume collected @ MW-5

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Brian Payne; Date/Time: 4/17/13 1000	Signature: R Smith; Date/Time: 4/18/13 1030	Signature: ; Date/Time:	Signature: ; Date/Time:
Printed Name: Brian Payne; Firm: Hart Crowser	Printed Name: R Smith; Firm: ALS	Printed Name: ; Firm:	Printed Name: ; Firm:

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PC Lisa

Cooler Receipt and Preservation Form

Client / Project: Hart Crowser Service Request *K13* 03535

Received: 4/18/13 Opened: 4/18/13 By: KO Unloaded: 4/18/13 By: KO

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 2, Front

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Temp	Corr. Temp	Raw Blank	Corr. Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-.5	-.6	1.0	.9	-.1	321		1Z 60W 168 03 9647 5	11
-.5	-.5	1.3	1.3	0	319			

7. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
MW-12	2-1LR				X	HNO3	2ml	0000021587	KO	1230
MW-7*	2-1LR						4ml			
MW-1a	2-1LR						2ml			
MW-13	2-1LR						2ml			
MW-5	6-1LR						2ml			

Notes, Discrepancies, & Resolutions: _____

Metals

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- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: Hart Crowser, Incorporated
Project Name: Sitcum Waterway
Project No.: 17472-01

Service Request: K1303535

Sample Name:	Lab Code:
MW-1	K1303535-001DISS
MW-1a	K1303535-002DISS
MW-5	K1303535-003DISS
MW-5D	K1303535-003DISSD
MW-5S	K1303535-003DISSS
MW-15	K1303535-004DISS
MW-7	K1303535-005DISS
MW-10	K1303535-006DISS
MW-12	K1303535-007DISS
MW-14	K1303535-008DISS
Method Blank	K1303535-MB

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1303535
Project No.:	17472-01	**Date Collected:**	04/16/13
Project Name:	Sitcum Waterway	**Date Received:**	04/18/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-1 **Lab Code:** K1303535-001DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/23/13	04/26/13	0.5	U	N

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1303535
Project No.:	17472-01	**Date Collected:**	04/16/13
Project Name:	Sitcum Waterway	**Date Received:**	04/18/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-1a **Lab Code:** K1303535-002DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/23/13	04/26/13	0.5	U	N

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1303535
Project No.:	17472-01	**Date Collected:**	04/16/13
Project Name:	Sitcum Waterway	**Date Received:**	04/18/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-5 **Lab Code:** K1303535-003DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/23/13	04/26/13	0.5	U	N

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1303535
Project No.:	17472-01	**Date Collected:**	04/16/13
Project Name:	Sitcum Waterway	**Date Received:**	04/18/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-15 **Lab Code:** K1303535-004DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/23/13	04/26/13	0.5	U	N

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1303535
Project No.:	17472-01	**Date Collected:**	04/16/13
Project Name:	Sitcum Waterway	**Date Received:**	04/18/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-7 **Lab Code:** K1303535-005DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/23/13	04/26/13	0.5	U	N

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1303535
Project No.:	17472-01	**Date Collected:**	04/16/13
Project Name:	Sitcum Waterway	**Date Received:**	04/18/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-10 **Lab Code:** K1303535-006DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/23/13	04/26/13	0.5	U	N

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1303535
Project No.:	17472-01	**Date Collected:**	04/16/13
Project Name:	Sitcum Waterway	**Date Received:**	04/18/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-12 **Lab Code:** K1303535-007DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/23/13	04/26/13	0.5	U	N

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1303535
Project No.:	17472-01	**Date Collected:**	04/16/13
Project Name:	Sitcum Waterway	**Date Received:**	04/18/13
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: MW-14 **Lab Code:** K1303535-008DISS

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/23/13	04/26/13	0.5	U	N

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Hart Crowser, Incorporated	**Service Request:**	K1303535
Project No.:	17472-01	**Date Collected:**	
Project Name:	Sitcum Waterway	**Date Received:**	
Matrix:	WATER	**Units:**	ug/L
		Basis:	NA

Sample Name: Method Blank **Lab Code:** K1303535-MB

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Arsenic	200.8	0.5	1.0	04/23/13	04/26/13	0.5	U	N

Comments:

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Hart Crowser, Incorporated Service Request: K1303535

Project No.: 17472-01

Project Name: Sitcum Waterway

ICV Source: Inorganic Ventures CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	25.0	25.8	103	25.0	24.8	99	25.2	101	200.8

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01

Project Name: Sitcum Waterway

ICV Source: **Inorganic Ventures** CCV Source: **CAS MIXED**

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				25.0	25.4	102	25.8	103	200.8

Metals

- 2b -
CRDL STANDARD FOR AA AND ICP

Client: Hart Crowser, Incorporated Service Request: K1303535

Project No.: 17472-01

Project Name: Sitcum Waterway

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Arsenic				5.00	5.07	101		

Metals

- 3 -

BLANKS

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01

Project Name: Sitcum Waterway

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Arsenic	5.00	U	5.00	U	5.00	U	5.00	U	200.8

Metals

- 3 -

BLANKS

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01

Project Name: Sitcum Waterway

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Arsenic			5.00	U					200.8

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01 **Units:** UG/L

Project Name: Sitcum Waterway **Basis:** NA

Matrix: WATER

Sample Name: MW-5S **Lab Code:** K1303535-003DISSS

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Arsenic	50 - 147	1.1		0.5	U	5.00	22.0	N	200.8

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01 **Units:** UG/L

Project Name: Sitcum Waterway **Basis:** NA

Matrix: WATER

Sample Name: MW-5D **Lab Code:** K1303535-003DISSD

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Arsenic		0.5	U	0.5	U			200.8

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals
- 7 -
LABORATORY CONTROL SAMPLE

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01

Project Name: Sitcum Waterway

Aqueous LCS Source: CAS MIXED **Solid LCS Source:**

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	Solid (mg/kg) C	Solid (mg/kg) Limits	Solid (mg/kg) %R
Arsenic	5	4.9	98.0					

Metals

- 10 -

DETECTION LIMITS

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01

Project Name: Sitcum Waterway

ICP/ICP-MS ID #: K-ICP-MS-02

GFAA ID #: AA ID #:

Analyte	Isotope	Back-ground	MRL ug/L	MDL ug/L	M
Arsenic	75		5.0	5.0	MS

Comments:

Metals
-12-
ICP LINEAR RANGES (QUARTERLY)

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01

Project Name: Sitcum Waterway

ICP ID Number: K-ICP-MS-02

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Arsenic	15.000	900	200.8

Comments:

Metals
-13-
PREPARATION LOG

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01

Project Name: Sitcum Waterway

Method: MS

Sample ID	Preparation Date	Initial Volume	Final Volume(mL)
K1303535-001DISS	04/23/13	1,000.0	100.0
K1303535-002DISS	04/23/13	1,000.0	100.0
K1303535-003DISS	04/23/13	1,000.0	100.0
K1303535-003DISSD	04/23/13	1,000.0	100.0
K1303535-003DISSS	04/23/13	1,000.0	100.0
K1303535-004DISS	04/23/13	1,000.0	100.0
K1303535-005DISS	04/23/13	1,000.0	100.0
K1303535-006DISS	04/23/13	1,000.0	100.0
K1303535-007DISS	04/23/13	1,000.0	100.0
K1303535-008DISS	04/23/13	1,000.0	100.0
K1303535-MB	04/23/13	1,000.0	100.0
LCSW	04/23/13	1,000.0	100.0

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Metals
- 14 -
ANALYSIS RUN LOG

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01 **Run Number:** 042613BMS02

Project Name: Sitcum Waterway

Instrument ID Number: K-ICP-MS-02 **Method:** MS

Start Date: 04/26/13 **End Date:** 04/26/13

Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.0	08:59				X																					
Calibration Std.	1.0	09:02				X																					
ICV1	1.0	09:05				X																					
CCV1	1.0	09:07				X																					
ICB1	1.0	09:10				X																					
CCB1	1.0	09:13				X																					
CRA1	1.0	09:16				X																					
ZZZZZZ	1.0	09:19																									
ZZZZZZ	1.0	09:22																									
ZZZZZZ	1.0	09:25																									
ZZZZZZ	1.0	09:28																									
ZZZZZZ	1.0	09:31																									
ZZZZZZ	1.0	09:33																									
ZZZZZZ	1.0	09:36																									
ZZZZZZ	1.0	09:39																									
ZZZZZZ	1.0	09:42																									
ZZZZZZ	1.0	09:45																									
CCV2	1.0	09:48				X																					
CCB2	1.0	09:51				X																					
ZZZZZZ	1.0	09:54																									
ZZZZZZ	1.0	09:57																									
ZZZZZZ	1.0	09:59																									
ZZZZZZ	1.0	10:02																									
ZZZZZZ	1.0	10:05																									
ZZZZZZ	1.0	10:08																									
K1303535-MB	1.0	10:11				X																					
LCSW	1.0	10:14				X																					
K1303535-001DISS	1.0	10:17				X																					
K1303535-002DISS	1.0	10:20				X																					
CCV3	1.0	10:23				X																					
CCB3	1.0	10:25				X																					
K1303535-003DISS	1.0	10:28				X																					

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

Metals
- 14 -
ANALYSIS RUN LOG

Client: Hart Crowser, Incorporated **Service Request:** K1303535

Project No.: 17472-01 **Run Number:** 042613BMS02

Project Name: Sitcum Waterway

Instrument ID Number: K-ICP-MS-02 **Method:** MS

Start Date: 04/26/13 **End Date:** 04/26/13

Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
K1303535-003DISSD	1.0	10:31				X																					
K1303535-003DISSS	1.0	10:34				X																					
K1303535-004DISS	1.0	10:37				X																					
K1303535-005DISS	1.0	10:40				X																					
K1303535-006DISS	1.0	10:43				X																					
K1303535-007DISS	1.0	10:46				X																					
K1303535-008DISS	1.0	10:49				X																					
CCV4	1.0	10:51				X																					
CCB4	1.0	10:54				X																					

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

Metals

15-IN

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: COLUMBIA ANALYTICAL SERVICES, INC Contract: 17472-01

Lab Code: CASK Case No.: _____ NRAS No.: _____ SDG NO.: K1303535

ICP-MS Instrument ID: K-ICP-MS-02 Start Date: 04/26/2013 End Date: 04/26/2013

Sample No.	Client ID	Time	Internal Standards %RI For:											
			Element Ga_71	Q	Element In_115	Q	Element	Q	Element	Q	Element	Q	Element	Q
Calibration	Calibration	0859	100		100									
Calibration Std.	Calibration Std.	0902	101		101									
ICV1	ICV1	0905	103		101									
CCV1	CCV1	0907	103		101									
ICB1	ICB1	0910	103		100									
CCB1	CCB1	0913	104		101									
CRA1	LLICVW	0916	106		101									
ZZZZZZ	ZZZZZZ	0919												
ZZZZZZ	ZZZZZZ	0922												
ZZZZZZ	ZZZZZZ	0925												
ZZZZZZ	ZZZZZZ	0928												
ZZZZZZ	ZZZZZZ	0931												
ZZZZZZ	ZZZZZZ	0933												
ZZZZZZ	ZZZZZZ	0936												
ZZZZZZ	ZZZZZZ	0939												
ZZZZZZ	ZZZZZZ	0942												
ZZZZZZ	ZZZZZZ	0945												
CCV2	CCV2	0948	96		102									
CCB2	CCB2	0951	97		103									
ZZZZZZ	ZZZZZZ	0954												
ZZZZZZ	ZZZZZZ	0957												
ZZZZZZ	ZZZZZZ	0959												
ZZZZZZ	ZZZZZZ	1002												
ZZZZZZ	ZZZZZZ	1005												
ZZZZZZ	ZZZZZZ	1008												
K1303535-MB	Method Blank	1011	92		102									
LCSW	LCSW	1014	92		102									
K1303535-001DISS	MW-1	1017	91		98									
K1303535-002DISS	MW-1a	1020	89		99									
CCV3	CCV3	1023	93		102									
CCB3	CCB3	1025	94		103									
K1303535-003DISS	MW-5	1028	86		94									
K1303535-003DISS	MW-5D	1031	83		92									
K1303535-003DISS	MW-5S	1034	81		90									
K1303535-004DISS	MW-15	1037	82		92									
K1303535-005DISS	MW-7	1040	77		88									
K1303535-006DISS	MW-10	1043	80		91									
K1303535-007DISS	MW-12	1046	79		91									
K1303535-008DISS	MW-14	1049	86		99									
CCV4	CCV4	1051	88		100									
CCB4	CCB4	1054	90		102									

Columbia Analytical Services™ **Preparation Information Benchsheet**

Prep Run: 181456
Team: Metals
Analyst: Anna Cheatley
Prep Workflow: MetDigRedPptAq
Prep Method: EPA 1640
Rush/NPDES: N/A
Status: Prepped
Current Step: Digestion
Prep Date: 04/23/2013 18:00
Due Date: 05/05/2013
Hold Date: 10/13/2013

Lab Code	Client ID	Bottle #	Initial Amt	Final Volume	Spike Amt	Spike ID	TestNo List	Comments
KQ1304056-01	Method Blank		100 mL	100 mL			Metals Redppt D	
KQ1304056-02	Lab Control Sample		1000 mL	100 mL			Metals Redppt D	
K1303535-001	MW-1	.01	1000 mL	100 mL			Metals Redppt D	
K1303535-002	MW-1a	.01	1000 mL	100 mL			Metals Redppt D	(pH<2)
K1303535-003	MW-5	.01	1000 mL	100 mL			Metals Redppt D	(pH<2)
K1303535-003: KQ1304056-03	Duplicate	.01	1000 mL	100 mL			Metals Redppt D	
K1303535-003: KQ1304056-04	Matrix Spike	.01	1000 mL	100 mL			Metals Redppt D	
K1303535-004	MW-15	.01	1000 mL	100 mL			Metals Redppt D	(pH<2)
K1303535-005	MW-7	.01	1000 mL	100 mL			Metals Redppt D	(pH<2)
K1303535-006	MW-10	.01	1000 mL	100 mL			Metals Redppt D	
K1303535-007	MW-12	.01	1000 mL	100 mL			Metals Redppt D	(pH<2)
K1303535-008	MW-14	.01	1000 mL	100 mL			Metals Redppt D	

12 Total Samples consisting of 8 Client Samples, 2 Client QC Samples, 2 Batch QC Samples associated with the current Prep Run.

Spiking Solutions

Preparation Materials

Preparation Hardware / Equipment

Preparation Steps

Step	Started	Finished	By	Assisted By	Training?	Comments
Digestion	23-APR-13 18:00	24-APR-13 19:00	Anna Cheatley		N	

Comments

LCS and K1303535-003 MS spiked with 5.0mL 200.8 Sol. (ms15-96-A) and 2.0mL 1000ppb Ag (ms16-22-C).

Review

Reviewed by: BJ Date: 4/25/13

Service Request K1303535 (RPTM)_____
Calibration _____042613BMS02_____
QC in calibration 042613BMS02_____
QC Service Request # K1303535_____
STARLIMS Batch # 338131_____

ICP-MS Data Review Form

	Yes	No	NA
1. Appropriate standardization completed	X		
2. ICV within 10 % of true value	X		
3. CCV's in control	X		
4. CCB's and/or ICB's below MRL	X		
5. Method blank below MRL	X		
6. LCS in control	X		
7. Spike and duplicate in control	X	X	
8. All analytes within instrument linear range	X		
9. Adequate rinse out time allowed	X		
10. Internal standards in control	X		
11. Interferences checked	X		
12. Se over MRL			X
13. CRA run	X		
14. ICSA and ICSAB in control			X
15. Serial dilution run			X
16. Post spike in control			X
17. Was the run terminated? If so, why.		X	

Comments: 22% Spike recovery. LCSW=98%. Report & flag.

Primary Review by _____ Date 4/26/13
Secondary Review by BJJ Date 4/26/13
R:\icp\misc\data review forms\PQ ExCell review form

Sample List

Num	Label	Type	Weight	Volume	Dilution	Rack	Row	Column	Height
1	Calibration Blank	Blank	0 kg	0 ml	1.00	0	1	1	145
2	Calibration Std.	Fully Quant Standard	0 kg	0 ml	1.00	0	1	2	145
3	ICV1	Unknown	0 kg	0 ml	1.00	0	1	3	145
4	CCV1	Unknown	0 kg	0 ml	1.00	0	1	2	145
5	ICB1	Unknown	0 kg	0 ml	1.00	0	1	1	145
6	CCB1	Unknown	0 kg	0 ml	1.00	0	1	1	145
7	LLICVW	Unknown	0 kg	0 ml	1.00	0	1	4	145
8	K1303612-MB	Unknown	0 kg	0 ml	1.00	1	1	1	145
9	LCSW	Unknown	0 kg	0 ml	1.00	1	1	2	145
10	LCSWD	Unknown	0 kg	0 ml	1.00	1	1	3	145
11	K1303612-001	Unknown	0 kg	0 ml	1.00	1	1	4	145
12	K1303612-002	Unknown	0 kg	0 ml	1.00	1	1	5	145
13	K1303612-003	Unknown	0 kg	0 ml	1.00	1	1	6	145
14	K1303612-004	Unknown	0 kg	0 ml	1.00	1	1	7	145
15	K1303612-005	Unknown	0 kg	0 ml	1.00	1	1	8	145
16	K1303612-006	Unknown	0 kg	0 ml	1.00	1	1	9	145
17	K1303612-007	Unknown	0 kg	0 ml	1.00	1	1	10	145
18	CCV2	Unknown	0 kg	0 ml	1.00	0	1	2	145
19	CCB2	Unknown	0 kg	0 ml	1.00	0	1	1	145
20	K1303612-008	Unknown	0 kg	0 ml	1.00	1	1	11	145
21	K1303612-009	Unknown	0 kg	0 ml	1.00	1	1	12	145
22	K1303612-010	Unknown	0 kg	0 ml	1.00	1	2	1	145
23	K1303612-011	Unknown	0 kg	0 ml	1.00	1	2	2	145
24	K1303612-012	Unknown	0 kg	0 ml	1.00	1	2	3	145
25	K1303618-001	Unknown	0 kg	0 ml	1.00	1	2	4	145
26	K1303535-MB	Unknown	0 kg	0 ml	1.00	1	2	5	145
27	LCSW	Unknown	0 kg	0 ml	1.00	1	2	6	145
28	K1303535-001	Unknown	0 kg	0 ml	1.00	1	2	7	145
29	K1303535-002	Unknown	0 kg	0 ml	1.00	1	2	8	145
30	CCV3	Unknown	0 kg	0 ml	1.00	0	1	2	145
31	CCB3	Unknown	0 kg	0 ml	1.00	0	1	1	145
32	K1303535-003	Unknown	0 kg	0 ml	1.00	1	2	9	145
33	K1303535-003D	Unknown	0 kg	0 ml	1.00	1	2	10	145
34	K1303535-003S	Unknown	0 kg	0 ml	1.00	1	2	11	145
35	K1303535-004	Unknown	0 kg	0 ml	1.00	1	2	12	145
36	K1303535-005	Unknown	0 kg	0 ml	1.00	1	3	1	145
37	K1303535-006	Unknown	0 kg	0 ml	1.00	1	3	2	145
38	K1303535-007	Unknown	0 kg	0 ml	1.00	1	3	3	145
39	K1303535-008	Unknown	0 kg	0 ml	1.00	1	3	4	145
40	CCV4	Unknown	0 kg	0 ml	1.00	0	1	2	145
41	CCB4	Unknown	0 kg	0 ml	1.00	0	1	1	145

Instrument Setup - Sample Configuration

Sample	Configuration	Date
All Samples	ALKLS.ALKLSXP310	6:27:18 4/26/13

nstrument Setup - Configurations

Configuration Name - ALKLS.ALKLSXP310
Description - PQExcell CCT Sim Default
Date - 6:27:18 4/26/13
Maximum Uptake Time - 0
Maximum Washout Time - 0
S-Option Pump Running - No
Plasma Screen Forward - No
Makeup Gas On - No
Use CCT - No
Use Accessory Gas - No

Setting	Value
Extraction	-450.00
Lens1	5.00
Lens2	-45.00
Lens3	-200.00
Pole Bias	1.00
Sampling Depth	375.00
Horizontal	-5.00
Vertical	95.00
Cool	13.00
Auxiliary	0.60
Nebuliser	0.82
Forward power	1,385.00
HT1 Voltage	1,900.00
HT2 Voltage	2,600.00
D1	-32.00
Focus	26.00

ExCell Mass Calibration **Date: 4/26/2013**

Mass	Mass DAC	Peak Width (AMU)	Error (AMU)	Include	Masses in Tune Solution
6.015	1211	0.665	0.018	TRUE	
7.016	1471	0.665	-0.004	TRUE	Li-7
9.012	1985	0.716	-0.03	TRUE	Be-9
23.985	5803	0.614	-0.076	TRUE	Mg-24
24.986	6056	0.665	-0.071	TRUE	Co-59
25.983	6303	0.665	-0.045	TRUE	In-115
26.982	6550	0.665	-0.018	TRUE	Ce-140
45.953	11357	0.818	0.046	TRUE	Pb-208
50.944	12631	0.818	0.026	TRUE	Bi-209
51.94	12878	0.818	0.051	TRUE	U-238
53.949	13391	0.767	0.043	TRUE	
55.935	13840	0.511	0.262	FALSE	
56.935	14152	0.818	0.036	TRUE	
57.934	14399	0.818	0.063	TRUE	
58.933	14659	0.818	0.04	TRUE	
62.93	15673	0.818	0.048	TRUE	
63.929	15926	0.767	0.052	TRUE	
69.925	17467	0.818	-0.012	TRUE	
75.92	18988	0.818	0.003	TRUE	
77.919	19495	0.818	0.007	TRUE	
112.904	28405	0.818	-0.041	TRUE	
114.904	28912	0.818	-0.035	TRUE	
128.905	32474	0.818	-0.037	TRUE	
131.905	33247	0.767	-0.076	TRUE	
137.906	34762	0.818	-0.03	TRUE	
139.905	35269	0.818	-0.024	TRUE	
141.908	35776	0.818	-0.014	TRUE	
155.923	39338	0.817	0	TRUE	
203.973	51558	0.817	0.024	TRUE	
205.974	52071	0.868	0.01	TRUE	
206.976	52325	0.817	0.014	TRUE	
207.977	52578	0.868	0.02	TRUE	
208.98	52832	0.817	0.026	TRUE	
238.051	60242	0.817	-0.018	TRUE	

Excluded In Calib | Excluded In Results | Multi Element | Internal Standard | Standard Addition

Uncorrected ICPS Per Mass

S-Calibration Has Edited Standard
F-Interference Correction Failed
E-Calibration Edited
T-Tripped
I-Invalid Calibration
P-Pulse Counting
V-Valley Integration Failed
M-Result Over Max

Run	Label	TimeStamp	[redacted]	7Li	9Be	24Mg	59Co	115In
1	Stability 04-26-2013	4/26/2013 6:36:25 A	(P)0.167	(P)28332.736	(P)5765.664	(P)32363.847	(P)59715.388	(P)62101.031
2	Stability 04-26-2013	4/26/2013 6:37:48 A	(P)0.500	(P)27868.661	(P)5517.399	(P)32235.046	(P)56478.099	(P)61609.938
3	Stability 04-26-2013	4/26/2013 6:39:11 A	(P)0.500	(P)26409.397	(P)5413.859	(P)31495.225	(P)54942.471	(P)61082.160
4	Stability 04-26-2013	4/26/2013 6:40:34 A	(P)0.167	(P)25900.959	(P)5236.460	(P)30249.850	(P)54430.168	(P)61037.803
5	Stability 04-26-2013	4/26/2013 6:41:57 A	(P)0.167	(P)26548.313	(P)5319.991	(P)29909.647	(P)54188.260	(P)60491.653
	Mean of Stability 04-	4/26/2013 6:36:25 A	(P)0.300	(P)27012.013	(P)5450.675	(P)31250.723	(P)55950.877	(P)61264.517
	SD of Stability 04-26-2		(P)0.183	(P)1035.707	(P)204.934	(P)1125.606	(P)2285.047	(P)612.585
	%RSD of Stability 04		(P)60.858	(P)3.834	(P)3.760	(P)3.602	(P)4.084	(P)1.000

Run	Label	TimeStamp	208Pb	209Bi	[redacted]	238U
1	Stability 04-26-2013	4/26/2013 6:36:25 A	(P)32901.521	(P)44759.190	(P)0.000	(P)54149.939
2	Stability 04-26-2013	4/26/2013 6:37:48 A	(P)33015.109	(P)45029.556	(P)0.000	(P)54535.237
3	Stability 04-26-2013	4/26/2013 6:39:11 A	(P)32948.794	(P)44811.036	(P)0.000	(P)54920.206
4	Stability 04-26-2013	4/26/2013 6:40:34 A	(P)32971.182	(P)44899.303	(P)0.167	(P)55362.750
5	Stability 04-26-2013	4/26/2013 6:41:57 A	(P)32963.334	(P)44822.731	(P)0.000	(P)55624.927
	Mean of Stability 04-	4/26/2013 6:36:25 A	(P)32959.988	(P)44864.363	(P)0.033	(P)54918.612
	SD of Stability 04-26-2		(P)40.984	(P)105.057	(P)0.075	(P)598.744
	%RSD of Stability 04		(P)0.124	(P)0.234	(P)223.607	(P)1.090

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**Calibration Blank**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 8:59**					
Arsenic	75	-0.2051	0.1081	0.0969	**0**	0.1777	0
Copper	63	-0.0023	-0.0049	0.0073	**0**	0.0064	0
Copper	65	0.0009	-0.002	0.0011	**0**	0.0017	0
Selenium	77	0.7065	-0.0344	-0.6721	**0**	0.6899	0
Selenium	78	0.295	-0.2462	-0.0488	**0**	0.2739	0
Selenium	82	-0.0998	0.15	-0.0502	**0**	0.1322	0
Zinc	66	0.0074	0.0073	-0.0147	**0**	0.0128	0
Zinc	67	0.0295	-0.012	-0.0175	**0**	0.0257	0
Zinc	68	0.0118	-0.0112	-0.0005	**0**	0.0115	0

Internal Standard Factors:

Gallium	71	1.042	0.988	0.973	**1.042**	n/a	n/a
Indium	115	1.042	0.989	0.972	**1.042**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**Calibration Std.**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:02**					
Arsenic	75	24.63	25.62	24.75	**25**	0.5381	2.152
Copper	63	24.3	25.55	25.14	**25**	0.6362	2.545
Copper	65	24.12	25.59	25.29	**25**	0.7792	3.117
Selenium	77	22.98	25.5	26.52	**25**	1.819	7.278
Selenium	78	24.04	26.02	24.93	**25**	0.9906	3.962
Selenium	82	24.17	25.55	25.28	**25**	0.7338	2.935
Zinc	66	24.58	25.19	25.23	**25**	0.3645	1.458
Zinc	67	24.11	25.44	25.45	**25**	0.7736	3.094
Zinc	68	24.22	25.58	25.2	**25**	0.7037	2.815

Internal Standard Factors:

Gallium	71	0.999	0.985	0.981	**0.999**	n/a	n/a
Indium	115	1.007	0.988	0.98	**1.007**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**ICV1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:05**					
Arsenic	75	25.8	25.68	25.78	**25.75**	0.0648	0.2515
Copper	63	13.03	13.12	13.08	**13.08**	0.0477	0.3644
Copper	65	13.2	13.25	13.18	**13.21**	0.0361	0.273
Selenium	77	23.71	24.47	24.78	**24.32**	0.5517	2.269
Selenium	78	24.78	24.62	24.61	**24.67**	0.0984	0.3987
Selenium	82	24.37	24.79	24.78	**24.65**	0.2392	0.9704
Zinc	66	25.42	25.33	25.6	**25.45**	0.1362	0.535
Zinc	67	31.58	31.1	31.26	**31.31**	0.2435	0.7777
Zinc	68	29.73	29.87	30.24	**29.95**	0.2665	0.89

Internal Standard Factors:

Gallium	71	0.995	0.964	0.96	**0.995**	n/a	n/a
Indium	115	1.024	0.98	0.973	**1.024**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**CCV1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:07**					
Arsenic	75	23.77	25.52	24.99	**24.76**	0.8977	3.626
Copper	63	23.98	25.21	25.31	**24.84**	0.7389	2.975
Copper	65	24	25.36	25.09	**24.82**	0.7174	2.891
Selenium	77	24.84	25.57	25.03	**25.15**	0.3788	1.506
Selenium	78	23.19	25.15	25.47	**24.6**	1.234	5.015
Selenium	82	23.56	24.93	24.28	**24.26**	0.6861	2.829
Zinc	66	24	25.68	24.88	**24.86**	0.84	3.379
Zinc	67	24.43	25.52	24.93	**24.96**	0.5461	2.188
Zinc	68	24.04	25.4	25.26	**24.9**	0.7454	2.994

Internal Standard Factors:

Gallium	71	0.974	0.965	0.965	**0.974**	n/a	n/a
Indium	115	1.011	0.988	0.975	**1.011**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**ICB1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:10**					
Arsenic	75	-0.1668	-0.0836	0.026	**-0.0748**	0.0967	129.2
Copper	63	-0.0074	-0.005	-0.0064	**-0.0062**	0.0012	19.46
Copper	65	0.0031	0.0031	-0.015	**-0.0029**	0.0104	356.1
Selenium	77	1.648	0.9854	0.603	**1.079**	0.529	49.03
Selenium	78	-0.2825	-0.1239	-0.248	**-0.2182**	0.0834	38.24
Selenium	82	0.0685	-0.1607	0.0167	**-0.0252**	0.1202	477.5
Zinc	66	-0.0037	0.0227	0.0102	**0.0097**	0.0132	135.8
Zinc	67	0.0714	0.0516	0.0834	**0.0688**	0.0161	23.36
Zinc	68	-0.037	-0.0055	-0.015	**-0.0192**	0.0162	84.49

Internal Standard Factors:

Gallium	71	0.992	0.973	0.958	**0.992**	n/a	n/a
Indium	115	1.042	0.986	0.971	**1.042**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**CCB1**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:13**					
Arsenic	75	-0.2263	-0.1426	-0.0007	**-0.1232**	0.1141	92.59
Copper	63	-0.0122	-0.0014	-0.0048	**-0.0061**	0.0055	89.8
Copper	65	0.0129	0.0206	-0.0025	**0.0103**	0.0117	113.8
Selenium	77	1.214	1.076	0.0723	**0.7876**	0.6233	79.14
Selenium	78	-0.1045	-0.1096	-0.6065	**-0.2735**	0.2883	105.4
Selenium	82	-0.2037	-0.1122	-0.1202	**-0.1454**	0.0507	34.87
Zinc	66	0.0099	0.0263	0.0066	**0.0143**	0.0105	73.77
Zinc	67	0.0073	0.0845	0.1043	**0.0654**	0.0513	78.42
Zinc	68	-0.0087	0.0159	-0.0341	**-0.009**	0.025	278

Internal Standard Factors:

Gallium	71	0.996	0.965	0.933	**0.996**	n/a	n/a
Indium	115	1.034	0.98	0.953	**1.034**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**LLICVW**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:16**					
Arsenic	75	5.245	4.995	4.961	**5.067**	0.1551	3.061
Copper	63	1.055	1.038	1.081	**1.058**	0.0221	2.084
Copper	65	1.101	1.109	1.071	**1.094**	0.0203	1.857
Selenium	77	8.571	8.706	8.676	**8.651**	0.0706	0.8157
Selenium	78	8.661	8.41	8.542	**8.538**	0.1253	1.467
Selenium	82	9.532	9.204	8.923	**9.219**	0.3048	3.306
Zinc	66	4.811	4.656	4.711	**4.726**	0.0785	1.661
Zinc	67	4.532	4.529	4.569	**4.543**	0.022	0.4851
Zinc	68	4.588	4.567	4.606	**4.587**	0.02	0.4362

Internal Standard Factors:

Gallium	71	0.976	0.937	0.931	**0.976**	n/a	n/a
Indium	115	1.026	0.972	0.97	**1.026**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-MB**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:19**					
Arsenic	75	-0.0567	-0.0318	0.0856	**-0.001**	0.076	7970
Copper	63	0.4582	0.4887	0.448	**0.465**	0.0212	4.556
Copper	65	0.0539	0.0406	0.0269	**0.0405**	0.0135	33.33
Selenium	77	0.5432	0.4744	-0.1645	**0.2844**	0.3902	137.2
Selenium	78	-0.3746	-0.5462	-0.6211	**-0.514**	0.1264	24.59
Selenium	82	-0.2061	-0.2102	-0.0731	**-0.1631**	0.078	47.83
Zinc	66	0.4492	0.4231	0.3711	**0.4145**	0.0398	9.596
Zinc	67	1.556	1.704	1.899	**1.72**	0.1719	9.994
Zinc	68	0.5554	0.5521	0.5185	**0.542**	0.0204	3.761

Internal Standard Factors:

Gallium	71	1.027	0.995	0.978	**1.027**	n/a	n/a
Indium	115	1.049	1.007	0.988	**1.049**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**LCSW**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:22**					
Arsenic	75	18.96	18.86	18.87	**18.9**	0.0553	0.2924
Copper	63	19.34	19.64	19.53	**19.5**	0.1511	0.7745
Copper	65	18.92	19.13	19.23	**19.09**	0.1537	0.8051
Selenium	77	18.3	18.82	19.12	**18.75**	0.4168	2.223
Selenium	78	17.79	18.47	18.4	**18.22**	0.3741	2.053
Selenium	82	18.76	18.3	18.21	**18.42**	0.2949	1.601
Zinc	66	19.46	19.54	19.75	**19.58**	0.1499	0.7655
Zinc	67	19.63	20.4	19.98	**20**	0.383	1.914
Zinc	68	19.2	19.55	19.64	**19.46**	0.2301	1.182

Internal Standard Factors:

Gallium	71	1.01	0.989	0.991	**1.01**	n/a	n/a
Indium	115	1.058	1.011	1.001	**1.058**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**LCSWD**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:25**					
Arsenic	75	19.05	18.75	19.47	**19.09**	0.3603	1.888
Copper	63	19.72	19.05	19.23	**19.34**	0.3484	1.802
Copper	65	19.44	18.91	19.68	**19.35**	0.3938	2.035
Selenium	77	18.85	18.56	19.79	**19.06**	0.6456	3.386
Selenium	78	18.86	17.92	19.54	**18.77**	0.8161	4.348
Selenium	82	18.13	18.67	18.97	**18.59**	0.4228	2.274
Zinc	66	19.71	19.11	20.18	**19.67**	0.5347	2.719
Zinc	67	20.36	20.4	20.68	**20.48**	0.1758	0.8582
Zinc	68	19.09	18.96	19.8	**19.28**	0.4517	2.343

Internal Standard Factors:

Gallium	71	1.045	1.01	1.032	**1.045**	n/a	n/a
Indium	115	1.059	1.002	1.013	**1.059**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-001**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:28**					
Arsenic	75	6.701	6.596	6.783	**6.694**	0.0936	1.399
Copper	63	8.959	8.846	8.78	**8.861**	0.0906	1.022
Copper	65	4.256	4.237	4.196	**4.229**	0.0305	0.7209
Selenium	77	-0.0712	-0.0481	-0.0096	**-0.043**	0.0311	72.43
Selenium	78	0.4116	0.8236	0.6541	**0.6297**	0.2071	32.88
Selenium	82	0.3837	0.4175	0.6274	**0.4762**	0.132	27.72
Zinc	66	18.92	19.12	19.05	**19.03**	0.098	0.5151
Zinc	67	16.93	17.3	17.19	**17.14**	0.1902	1.109
Zinc	68	17.76	17.68	17.82	**17.75**	0.073	0.4113

Internal Standard Factors:

Gallium	71	1.149	1.11	1.102	**1.149**	n/a	n/a
Indium	115	1.154	1.078	1.073	**1.154**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-002**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:31**					
Arsenic	75	6.794	6.22	6.945	**6.653**	0.3826	5.751
Copper	63	4.926	4.761	4.949	**4.879**	0.1024	2.099
Copper	65	0.6158	0.5923	0.6475	**0.6186**	0.0277	4.481
Selenium	77	-0.9251	0.1034	0.0333	**-0.2628**	0.5746	218.7
Selenium	78	0.3925	0.4431	0.9853	**0.607**	0.3286	54.14
Selenium	82	0.5237	0.3859	0.1866	**0.3654**	0.1695	46.38
Zinc	66	4.659	4.558	5.026	**4.747**	0.2466	5.194
Zinc	67	4.125	4.143	4.584	**4.284**	0.2599	6.066
Zinc	68	4.375	4.108	4.454	**4.312**	0.1814	4.207

Internal Standard Factors:

Gallium	71	1.135	1.104	1.133	**1.135**	n/a	n/a
Indium	115	1.131	1.06	1.073	**1.131**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-003**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:33**					
Arsenic	75	6.39	6.548	6.686	**6.541**	0.148	2.263
Copper	63	7.881	7.644	7.637	**7.721**	0.139	1.801
Copper	65	3.588	3.636	3.564	**3.596**	0.0369	1.027
Selenium	77	-0.272	-0.621	-0.7976	**-0.5635**	0.2675	47.47
Selenium	78	0.831	0.5985	0.4066	**0.612**	0.2125	34.73
Selenium	82	0.1049	0.1479	0.2176	**0.1568**	0.0568	36.25
Zinc	66	183.3	187.9	186.6	**185.9**	2.36	1.269
Zinc	67	169.6	170.5	167.4	**169.2**	1.605	0.9485
Zinc	68	177.4	179	174.4	**176.9**	2.328	1.316

Internal Standard Factors:

Gallium	71	1.161	1.123	1.106	**1.161**	n/a	n/a
Indium	115	1.127	1.072	1.061	**1.127**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-004**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:36**					
Arsenic	75	6.762	6.709	7.009	**6.827**	0.1599	2.343
Copper	63	5.581	5.551	5.664	**5.598**	0.0583	1.041
Copper	65	0.9577	0.9633	0.9791	**0.9667**	0.0111	1.148
Selenium	77	-0.1146	0.1404	-0.8054	**-0.2599**	0.4893	188.3
Selenium	78	0.6103	1.036	1.135	**0.9272**	0.279	30.08
Selenium	82	0.0886	0.275	0.6019	**0.3218**	0.2599	80.74
Zinc	66	5.4	5.388	5.38	**5.39**	0.0103	0.1915
Zinc	67	4.798	4.953	4.717	**4.823**	0.1201	2.49
Zinc	68	4.908	4.672	4.753	**4.778**	0.1197	2.505

Internal Standard Factors:

Gallium	71	1.16	1.125	1.126	**1.16**	n/a	n/a
Indium	115	1.12	1.077	1.057	**1.12**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-005**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:39**					
Arsenic	75	6.986	6.818	6.884	**6.896**	0.0849	1.23
Copper	63	4.89	4.711	4.708	**4.77**	0.1047	2.194
Copper	65	0.5967	0.5689	0.5745	**0.58**	0.0147	2.535
Selenium	77	-0.109	-0.1134	-0.2244	**-0.1489**	0.0654	43.92
Selenium	78	0.9537	0.9521	0.9173	**0.941**	0.0206	2.184
Selenium	82	0.4023	0.2111	0.1165	**0.2433**	0.1456	59.84
Zinc	66	2.353	2.258	2.307	**2.306**	0.0475	2.06
Zinc	67	1.863	2.073	2.063	**2**	0.1184	5.92
Zinc	68	1.92	1.865	1.823	**1.869**	0.0488	2.609

Internal Standard Factors:

Gallium	71	1.189	1.128	1.122	**1.189**	n/a	n/a
Indium	115	1.125	1.06	1.05	**1.125**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-006**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:42**					
Arsenic	75	6.814	6.846	6.914	**6.858**	0.051	0.7442
Copper	63	15.67	15.37	15.41	**15.48**	0.1598	1.032
Copper	65	11.81	11.5	11.49	**11.6**	0.1822	1.571
Selenium	77	0.34	0.4658	-0.9556	**-0.0499**	0.7869	1577
Selenium	78	1.413	0.9433	0.6474	**1.001**	0.3861	38.56
Selenium	82	0.8344	0.5934	0.5114	**0.6464**	0.1679	25.97
Zinc	66	86.65	85.41	82.31	**84.79**	2.236	2.637
Zinc	67	79.22	77.85	74.49	**77.19**	2.433	3.152
Zinc	68	82.04	81.09	80.07	**81.07**	0.9814	1.211

Internal Standard Factors:

Gallium	71	1.186	1.124	1.108	**1.186**	n/a	n/a
Indium	115	1.118	1.059	1.052	**1.118**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-007**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:45**					
Arsenic	75	7.043	7.207	7.061	**7.103**	0.09	1.267
Copper	63	5.867	5.788	5.698	**5.784**	0.0846	1.462
Copper	65	2.157	2.156	2.131	**2.148**	0.0149	0.6912
Selenium	77	-1.286	-0.8572	-1.303	**-1.149**	0.2527	22
Selenium	78	0.6366	0.428	0.3811	**0.4819**	0.136	28.22
Selenium	82	0.4792	0.3273	0.5476	**0.4514**	0.1128	24.98
Zinc	66	4.744	4.748	4.74	**4.744**	0.004	0.0836
Zinc	67	4.136	4.138	4.274	**4.183**	0.079	1.887
Zinc	68	4.167	4.355	4.259	**4.261**	0.0942	2.211

Internal Standard Factors:

Gallium	71	1.164	1.12	1.112	**1.164**	n/a	n/a
Indium	115	1.104	1.043	1.032	**1.104**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**CCV2**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:48**					
Arsenic	75	25.27	25.11	25.2	**25.19**	0.0787	0.3125
Copper	63	25.38	25.14	25.06	**25.2**	0.1654	0.6565
Copper	65	25.36	25.2	25.51	**25.36**	0.154	0.6075
Selenium	77	25.68	24.41	25.85	**25.31**	0.7888	3.116
Selenium	78	25.35	25.26	25.23	**25.28**	0.0629	0.2487
Selenium	82	24.96	24.8	24.73	**24.83**	0.1185	0.4773
Zinc	66	25.3	25.05	25.32	**25.23**	0.1503	0.5958
Zinc	67	24.65	24.98	26.26	**25.3**	0.849	3.356
Zinc	68	25.22	25.26	25.52	**25.33**	0.1617	0.6384

Internal Standard Factors:

Gallium	71	1.076	1.029	1.028	**1.076**	n/a	n/a
Indium	115	1.034	0.974	0.954	**1.034**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**CCB2**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:51**					
Arsenic	75	-0.1229	-0.0166	-0.0729	**-0.0708**	0.0532	75.11
Copper	63	0.0214	0.007	-0.0131	**0.0051**	0.0173	338.7
Copper	65	0.0211	0.008	0.0001	**0.0098**	0.0106	108.8
Selenium	77	0.5631	0.2054	-0.0301	**0.2461**	0.2987	121.4
Selenium	78	0.3438	0.0204	0.0804	**0.1482**	0.172	116.1
Selenium	82	-0.1656	-0.2244	-0.1414	**-0.1771**	0.0427	24.1
Zinc	66	0.0101	-0.0057	-0.01	**-0.0019**	0.0106	565.8
Zinc	67	-0.0243	-0.0164	-0.0626	**-0.0345**	0.0247	71.72
Zinc	68	-0.0521	0.019	-0.0336	**-0.0223**	0.0369	165.7

Internal Standard Factors:

Gallium	71	1.072	1.02	1.005	**1.072**	n/a	n/a
Indium	115	1.026	0.964	0.94	**1.026**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-008**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:54**					
Arsenic	75	7.093	6.85	6.662	**6.868**	0.2158	3.143
Copper	63	5.488	5.68	5.725	**5.631**	0.1257	2.233
Copper	65	0.8993	0.8738	0.8881	**0.8871**	0.0128	1.444
Selenium	77	0.1802	0.2895	0.7766	**0.4154**	0.3176	76.44
Selenium	78	0.7481	0.8923	0.8273	**0.8226**	0.0722	8.778
Selenium	82	0.425	0.6083	0.3872	**0.4735**	0.1183	24.98
Zinc	66	4.028	3.953	4.003	**3.994**	0.038	0.9503
Zinc	67	3.391	3.465	3.268	**3.375**	0.0998	2.957
Zinc	68	3.471	3.389	3.368	**3.409**	0.0547	1.606

Internal Standard Factors:

Gallium	71	1.156	1.12	1.135	**1.156**	n/a	n/a
Indium	115	1.107	1.06	1.051	**1.107**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-009**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:57**					
Arsenic	75	7.006	7.059	7.104	**7.056**	0.049	0.6948
Copper	63	7.119	7.062	7.046	**7.076**	0.0384	0.5427
Copper	65	3.161	3.126	3.157	**3.148**	0.0191	0.6078
Selenium	77	-0.0646	-0.2646	0.284	**-0.0151**	0.2777	1842
Selenium	78	1.254	1.249	1.245	**1.249**	0.0045	0.3608
Selenium	82	0.5385	0.4571	0.6153	**0.537**	0.0791	14.73
Zinc	66	43.58	44.95	44.63	**44.39**	0.7185	1.619
Zinc	67	39.29	40.07	40.23	**39.86**	0.501	1.257
Zinc	68	42.14	41.65	42.15	**41.98**	0.2847	0.6783

Internal Standard Factors:

Gallium	71	1.174	1.152	1.148	**1.174**	n/a	n/a
Indium	115	1.11	1.059	1.05	**1.11**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-010**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 9:59**					
Arsenic	75	6.962	6.796	6.808	**6.856**	0.0926	1.35
Copper	63	5.561	5.359	5.454	**5.458**	0.1007	1.845
Copper	65	1.641	1.641	1.59	**1.624**	0.0296	1.82
Selenium	77	0.2277	-0.1596	-0.4758	**-0.1359**	0.3523	259.3
Selenium	78	0.9268	0.708	0.9564	**0.8637**	0.1357	15.71
Selenium	82	0.3861	0.4282	0.3716	**0.3953**	0.0294	7.44
Zinc	66	9.139	8.851	9.015	**9.002**	0.1443	1.603
Zinc	67	7.887	7.774	7.782	**7.815**	0.0632	0.8081
Zinc	68	8.344	8.232	8.211	**8.262**	0.0715	0.8658

Internal Standard Factors:

Gallium	71	1.203	1.146	1.149	**1.203**	n/a	n/a
Indium	115	1.116	1.061	1.045	**1.116**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-011**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:02**					
Arsenic	75	6.76	6.661	6.77	**6.73**	0.0604	0.8974
Copper	63	5.348	5.329	5.37	**5.349**	0.0202	0.3784
Copper	65	0.6015	0.6153	0.6084	**0.6084**	0.0069	1.136
Selenium	77	-0.1688	0.4677	-0.5754	**-0.0922**	0.5257	570.3
Selenium	78	0.57	0.7166	0.6722	**0.6529**	0.0752	11.51
Selenium	82	0.6219	0.6051	0.706	**0.6443**	0.0541	8.391
Zinc	66	3.604	3.562	3.523	**3.563**	0.0404	1.134
Zinc	67	2.893	2.899	2.88	**2.891**	0.0098	0.3401
Zinc	68	2.868	2.832	3.014	**2.905**	0.0961	3.309

Internal Standard Factors:

Gallium	71	1.21	1.175	1.165	**1.21**	n/a	n/a
Indium	115	1.117	1.064	1.049	**1.117**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303612-012**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:05**					
Arsenic	75	6.65	6.492	6.925	**6.689**	0.2192	3.277
Copper	63	8.436	8.264	8.417	**8.372**	0.0942	1.125
Copper	65	5.018	4.949	4.967	**4.978**	0.0358	0.7186
Selenium	77	-0.5899	-0.0295	-0.0967	**-0.2387**	0.306	128.2
Selenium	78	0.6587	0.5533	0.7074	**0.6398**	0.0788	12.31
Selenium	82	0.3903	0.1043	0.7963	**0.4303**	0.3477	80.81
Zinc	66	161.9	161.8	161.8	**161.9**	0.0457	0.0282
Zinc	67	145.1	149.7	146.1	**147**	2.421	1.647
Zinc	68	155	154.1	153.8	**154.3**	0.6276	0.4067

Internal Standard Factors:

Gallium	71	1.204	1.164	1.153	**1.204**	n/a	n/a
Indium	115	1.112	1.049	1.045	**1.112**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303618-001**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:08**					
Arsenic	75	7.7	7.708	7.757	**7.722**	0.031	0.4011
Copper	63	34.46	33.93	34.18	**34.19**	0.2611	0.7636
Copper	65	33.02	32.86	33.28	**33.05**	0.2114	0.6396
Selenium	77	61.65	60.8	60.53	**61**	0.584	0.9574
Selenium	78	64.35	63.55	64.52	**64.14**	0.5194	0.8098
Selenium	82	65.46	64.78	64.58	**64.94**	0.464	0.7146
Zinc	66	744.5	748.8	757.1	**750.1**	6.428	0.8569
Zinc	67	715.2	718.3	712.9	**715.4**	2.727	0.3812
Zinc	68	738.7	733.6	738.3	**736.9**	2.864	0.3886

Internal Standard Factors:

Gallium	71	1.181	1.128	1.129	**1.181**	n/a	n/a
Indium	115	1.093	1.031	1.026	**1.093**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-MB**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:11**					
Arsenic	75	0.0349	0.1082	-0.2528	**-0.0366**	0.1908	521.5
Copper	63	0.5059	0.5291	0.4893	**0.5081**	0.02	3.94
Copper	65	0.0629	0.0608	0.051	**0.0582**	0.0063	10.88
Selenium	77	-1.133	-1.343	-0.0491	**-0.8416**	0.6944	82.51
Selenium	78	0.2762	0.0765	0.0277	**0.1268**	0.1317	103.8
Selenium	82	0.2407	0.0388	-0.0999	**0.0599**	0.1713	286.1
Zinc	66	0.4032	0.3212	0.2931	**0.3392**	0.0572	16.87
Zinc	67	0.7551	0.7592	0.9065	**0.8069**	0.0863	10.69
Zinc	68	0.3619	0.322	0.2489	**0.3109**	0.0573	18.43

Internal Standard Factors:

Gallium	71	1.113	1.088	1.069	**1.113**	n/a	n/a
Indium	115	1.027	0.975	0.959	**1.027**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**LCSW**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:14**					
Arsenic	75	48.53	49.28	49.02	**48.94**	0.3817	0.7799
Copper	63	47.93	46.6	47.09	**47.21**	0.6715	1.422
Copper	65	47.64	48.09	48.31	**48.01**	0.3444	0.7173
Selenium	77	48.06	47	47.43	**47.5**	0.5363	1.129
Selenium	78	48.93	49.29	49.21	**49.14**	0.1854	0.3773
Selenium	82	48.8	50.13	49.04	**49.33**	0.7098	1.439
Zinc	66	49.05	48.86	48.82	**48.91**	0.1238	0.2531
Zinc	67	48.13	47.31	47.9	**47.78**	0.4246	0.8887
Zinc	68	47.29	47.56	47.5	**47.45**	0.1396	0.2943

Internal Standard Factors:

Gallium	71	1.117	1.074	1.067	**1.117**	n/a	n/a
Indium	115	1.012	0.979	0.975	**1.012**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-001**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:17**					
Arsenic	75	0.8018	0.4103	0.5156	**0.5759**	0.2026	35.18
Copper	63	0.5446	0.5133	0.5269	**0.5283**	0.0157	2.974
Copper	65	0.387	0.3849	0.3822	**0.3847**	0.0024	0.6359
Selenium	77	1.767	2.377	2.822	**2.322**	0.5297	22.82
Selenium	78	0.0445	-0.2182	0.3614	**0.0626**	0.2902	463.8
Selenium	82	0.5905	0.2895	0.3507	**0.4102**	0.1591	38.77
Zinc	66	2.93	2.856	2.897	**2.894**	0.0372	1.284
Zinc	67	5.647	6.217	6.207	**6.024**	0.3262	5.416
Zinc	68	4.064	4.054	4.128	**4.082**	0.04	0.9797

Internal Standard Factors:

Gallium	71	1.126	1.079	1.1	**1.126**	n/a	n/a
Indium	115	1.06	0.999	1.003	**1.06**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-002**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:20**					
Arsenic	75	0.7363	0.9513	0.871	**0.8529**	0.1086	12.74
Copper	63	1.007	1.052	0.9902	**1.016**	0.0322	3.168
Copper	65	0.6167	0.6647	0.6249	**0.6354**	0.0257	4.044
Selenium	77	2.819	1.448	1.881	**2.05**	0.7007	34.19
Selenium	78	0.3071	0.3352	0.0897	**0.244**	0.1344	55.08
Selenium	82	0.5986	0.0518	0.1442	**0.2649**	0.2927	110.5
Zinc	66	1.837	1.866	1.813	**1.839**	0.0267	1.449
Zinc	67	10.98	11.04	10.82	**10.95**	0.1131	1.033
Zinc	68	7.435	7.301	7.337	**7.358**	0.0696	0.9465

Internal Standard Factors:

Gallium	71	1.162	1.112	1.101	**1.162**	n/a	n/a
Indium	115	1.056	1.007	0.993	**1.056**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**CCV3**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:23**					
Arsenic	75	25.68	24.16	26.48	**25.44**	1.176	4.621
Copper	63	25.13	23.69	26.66	**25.16**	1.487	5.91
Copper	65	25.11	23.81	26.56	**25.16**	1.378	5.476
Selenium	77	26.4	24.5	28.92	**26.61**	2.216	8.328
Selenium	78	25.33	23.73	26.96	**25.34**	1.613	6.365
Selenium	82	25.24	24.17	26.76	**25.39**	1.302	5.127
Zinc	66	24.51	22.98	26.1	**24.53**	1.561	6.365
Zinc	67	26.27	24.12	27.59	**25.99**	1.756	6.754
Zinc	68	24.92	23.18	26.39	**24.83**	1.605	6.465

Internal Standard Factors:

Gallium	71	1.11	1.028	1.073	**1.11**	n/a	n/a
Indium	115	1.023	0.947	0.978	**1.023**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**CCB3**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:25**					
Arsenic	75	-0.2878	-0.2498	-0.104	**-0.2138**	0.097	45.36
Copper	63	0.0147	0.0169	-0.0012	**0.0101**	0.0099	97.78
Copper	65	0.0067	0.0141	0.0024	**0.0077**	0.0059	76.46
Selenium	77	2.845	2.268	1.733	**2.282**	0.5561	24.37
Selenium	78	0.3797	-0.1808	-0.1691	**0.0099**	0.3203	3228
Selenium	82	-0.046	-0.3332	-0.1972	**-0.1921**	0.1437	74.76
Zinc	66	-0.0209	0.0037	0.0084	**-0.0029**	0.0157	535.4
Zinc	67	0.4462	0.3508	0.3407	**0.3792**	0.0582	15.35
Zinc	68	-0.0145	-0.0563	0.0262	**-0.0149**	0.0412	277.5

Internal Standard Factors:

Gallium	71	1.1	1.049	1.037	**1.1**	n/a	n/a
Indium	115	1.002	0.96	0.949	**1.002**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-003**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:28**					
Arsenic	75	1.165	1.063	0.9873	**1.072**	0.089	8.308
Copper	63	4.117	4.001	4.032	**4.05**	0.0599	1.479
Copper	65	0.7764	0.785	0.7624	**0.7746**	0.0114	1.469
Selenium	77	2.544	2.572	2.059	**2.392**	0.2883	12.05
Selenium	78	0.7964	0.5272	0.3527	**0.5588**	0.2235	40
Selenium	82	2.07	1.85	1.923	**1.948**	0.1121	5.753
Zinc	66	17.37	17.04	16.98	**17.13**	0.2082	1.215
Zinc	67	22.57	21.54	22	**22.04**	0.5153	2.338
Zinc	68	20.78	20.45	20.4	**20.54**	0.2072	1.009

Internal Standard Factors:

Gallium	71	1.19	1.151	1.154	**1.19**	n/a	n/a
Indium	115	1.116	1.064	1.045	**1.116**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-003D**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:31**					
Arsenic	75	1.083	0.828	1.05	**0.9871**	0.1387	14.05
Copper	63	4.085	4.001	4.105	**4.064**	0.0549	1.35
Copper	65	0.7803	0.7095	0.771	**0.7536**	0.0385	5.109
Selenium	77	1.875	2.795	2.183	**2.284**	0.4685	20.51
Selenium	78	0.5885	0.5387	0.9409	**0.6894**	0.2192	31.8
Selenium	82	2.088	1.663	2.007	**1.919**	0.2257	11.76
Zinc	66	17.34	17.29	17.47	**17.37**	0.0938	0.5403
Zinc	67	21.77	22.73	22.49	**22.33**	0.4971	2.226
Zinc	68	20.72	20.63	20.39	**20.58**	0.1714	0.833

Internal Standard Factors:

Gallium	71	1.229	1.192	1.19	**1.229**	n/a	n/a
Indium	115	1.125	1.083	1.072	**1.125**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-003S**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:34**					
Arsenic	75	11.95	10.56	11.14	**11.22**	0.7017	6.255
Copper	63	53.35	48.32	47.92	**49.86**	3.023	6.063
Copper	65	48.7	45.44	44.71	**46.28**	2.122	4.584
Selenium	77	53	49.88	48.66	**50.51**	2.239	4.432
Selenium	78	52.9	48.46	48.75	**50.03**	2.484	4.965
Selenium	82	54.09	50.36	50.59	**51.68**	2.088	4.041
Zinc	66	64.21	59.88	59.12	**61.07**	2.745	4.495
Zinc	67	66.92	63.05	61.05	**63.67**	2.987	4.691
Zinc	68	66.65	60.96	60.29	**62.63**	3.496	5.582

Internal Standard Factors:

Gallium	71	1.299	1.21	1.193	**1.299**	n/a	n/a
Indium	115	1.182	1.098	1.082	**1.182**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-004**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:37**					
Arsenic	75	1.136	0.9555	1.073	**1.055**	0.0916	8.686
Copper	63	4.229	4.267	4.277	**4.258**	0.0255	0.598
Copper	65	0.7355	0.7349	0.7674	**0.7459**	0.0186	2.494
Selenium	77	1.569	1.858	0.8099	**1.412**	0.5412	38.32
Selenium	78	0.9179	0.5286	0.3339	**0.5935**	0.2974	50.11
Selenium	82	2.266	2.216	2.112	**2.198**	0.0784	3.565
Zinc	66	12.28	12.39	12.08	**12.25**	0.1539	1.256
Zinc	67	17.17	17.28	17.36	**17.27**	0.0941	0.5449
Zinc	68	15.5	15.84	15.62	**15.65**	0.1737	1.109

Internal Standard Factors:

Gallium	71	1.254	1.206	1.196	**1.254**	n/a	n/a
Indium	115	1.133	1.084	1.07	**1.133**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-005**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:40**					
Arsenic	75	2.296	2.08	2.002	**2.126**	0.1519	7.143
Copper	63	5.906	5.817	5.687	**5.803**	0.1102	1.898
Copper	65	0.8452	0.8162	0.8195	**0.8269**	0.0159	1.921
Selenium	77	3.756	4.545	4.332	**4.211**	0.4081	9.692
Selenium	78	1.534	1.465	1.363	**1.454**	0.0859	5.905
Selenium	82	4.001	3.954	3.983	**3.979**	0.0236	0.5931
Zinc	66	5.393	5.329	5.35	**5.357**	0.0327	0.6109
Zinc	67	68.59	68.2	67.43	**68.07**	0.5931	0.8712
Zinc	68	52.85	52.27	52.05	**52.39**	0.4153	0.7927

Internal Standard Factors:

Gallium	71	1.333	1.293	1.287	**1.333**	n/a	n/a
Indium	115	1.178	1.135	1.129	**1.178**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-006**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:43**					
Arsenic	75	0.1429	0.3823	0.4162	**0.3138**	0.149	47.48
Copper	63	5.134	5.107	5.245	**5.162**	0.0732	1.417
Copper	65	1.747	1.758	1.747	**1.751**	0.0062	0.3567
Selenium	77	1.342	0.9408	0.9199	**1.067**	0.2377	22.27
Selenium	78	1.046	1.009	0.7638	**0.9396**	0.1533	16.32
Selenium	82	0.791	0.9261	1.014	**0.9105**	0.1125	12.36
Zinc	66	24.71	24.73	24.48	**24.64**	0.1385	0.5622
Zinc	67	24.07	23.44	23.3	**23.6**	0.4101	1.737
Zinc	68	24.46	24.38	24.5	**24.45**	0.0633	0.259

Internal Standard Factors:

Gallium	71	1.289	1.246	1.231	**1.289**	n/a	n/a
Indium	115	1.153	1.088	1.079	**1.153**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-007**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:46**					
Arsenic	75	1.07	0.8964	0.9331	**0.9665**	0.0915	9.469
Copper	63	5.11	5.04	5.006	**5.052**	0.0532	1.053
Copper	65	0.5293	0.5273	0.5436	**0.5334**	0.0089	1.67
Selenium	77	1.616	2.03	1.944	**1.864**	0.2188	11.74
Selenium	78	1.376	1.068	1.19	**1.211**	0.155	12.8
Selenium	82	2.332	2.493	2.586	**2.47**	0.1284	5.198
Zinc	66	1.257	1.176	1.217	**1.217**	0.0404	3.317
Zinc	67	3.97	4.16	3.999	**4.043**	0.1022	2.527
Zinc	68	2.854	2.791	2.875	**2.84**	0.0436	1.535

Internal Standard Factors:

Gallium	71	1.31	1.255	1.25	**1.31**	n/a	n/a
Indium	115	1.141	1.083	1.077	**1.141**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**K1303535-008**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:49**					
Arsenic	75	2.603	2.536	2.401	**2.513**	0.1028	4.089
Copper	63	85.96	84.5	82.61	**84.35**	1.68	1.991
Copper	65	85.41	84.36	83.06	**84.28**	1.177	1.397
Selenium	77	0.1141	-0.2078	0.114	**0.0068**	0.1858	2739
Selenium	78	0.3691	0.2924	0.2158	**0.2924**	0.0767	26.22
Selenium	82	0.3223	0.331	0.2796	**0.311**	0.0275	8.839
Zinc	66	781.1	778.7	756	**771.9**	13.88	1.798
Zinc	67	715	707.8	692.4	**705.1**	11.54	1.637
Zinc	68	746.4	734.6	722.7	**734.5**	11.85	1.613

Internal Standard Factors:

Gallium	71	1.22	1.16	1.123	**1.22**	n/a	n/a
Indium	115	1.06	1.005	0.983	**1.06**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**CCV4**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:51**					
Arsenic	75	25.77	25.8	25.68	**25.75**	0.0622	0.2415
Copper	63	25.71	25.57	25.24	**25.51**	0.2414	0.9464
Copper	65	26.26	25.58	25.59	**25.81**	0.3893	1.508
Selenium	77	26.5	24.91	25.75	**25.72**	0.7937	3.086
Selenium	78	26.01	26.33	25.58	**25.97**	0.3727	1.435
Selenium	82	26.3	25.91	25.49	**25.9**	0.4024	1.554
Zinc	66	25.2	25.16	24.92	**25.09**	0.1505	0.5997
Zinc	67	25.55	24.83	24.82	**25.07**	0.4145	1.654
Zinc	68	25.07	25.05	25.07	**25.07**	0.0125	0.0499

Internal Standard Factors:

Gallium	71	1.179	1.123	1.099	**1.179**	n/a	n/a
Indium	115	1.035	0.99	0.982	**1.035**	n/a	n/a

Instrument ID: K-ICP-MS-02
Experiment: 04-26-13B
Units: µg/L (ppb)

Method: EPA 200.8
Analyst: Greg Jasper
STARLIMS #338151

Sample Name:		**CCB4**			**Mean**	**SD**	**%RSD**
TimeStamp		**4/26/13 10:54**					
Arsenic	75	0.022	-0.1239	0.0273	**-0.0249**	0.0858	344.8
Copper	63	0.015	0.0121	0.0047	**0.0106**	0.0053	50.14
Copper	65	0.0158	0.0159	0.0231	**0.0183**	0.0042	22.8
Selenium	77	0.7712	1.225	0.7404	**0.9123**	0.2715	29.76
Selenium	78	-0.0114	-0.0364	0.351	**0.1011**	0.2168	214.5
Selenium	82	0.074	0.2032	0.1186	**0.1319**	0.0657	49.77
Zinc	66	0.034	-0.0059	0.0214	**0.0165**	0.0204	123.5
Zinc	67	0.1064	0.1371	0.1652	**0.1362**	0.0294	21.57
Zinc	68	0.0232	-0.0076	0.0336	**0.0164**	0.0214	130.5

Internal Standard Factors:

Gallium	71	1.154	1.098	1.093	**1.154**	n/a	n/a
Indium	115	1.029	0.973	0.96	**1.029**	n/a	n/a

APPENDIX C
June 6, 2013 MEMORANDUM
SITCUM – MILWAUKEE NCDF GW MONITORING

MEMORANDUM

DATE: June 6, 2013

TO: Scott Hooten, Port of Tacoma

FROM: Roger McGinnis

RE: **Sitcum - Milwaukee NCDF GW Monitoring**
17472-01

CC: Karen Keely, USEPA

Introduction

As specified in the Operations, Maintenance, and Monitoring Plan, Shewart-Cumulative Sum (CuSum) control chart procedures are used for the Stage 1 Sitcum Waterway Remediation Project. In 2008, EPA's approval letter on GW monitoring said:

"As stated in earlier correspondence, please note that once revised EPA statistical guidance for groundwater becomes available, EPA Region 10 may recommend revisions to the Standard Deviations currently being used for the CuSum approach."

Per EPA's request, this memo presents results of our review of revised EPA statistical guidance for groundwater monitoring data to determine if the CuSum approach should be revised to be consistent with the "new" (2009) guidance.

Chapter 20 of the new Unified Guidance recommends the use of CuSum control charts as a useful and powerful alternative to parametric prediction limits for groundwater detection monitoring. An advantage of control charts over prediction limits is that control charts graph compliance data over time so that trends and changes in concentration levels are easy to see.

Based on the information from the new Unified Guidance summarized below, the current Shewart-Cumulative Sum control chart procedure should continue to be used.

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Seattle, Washington 98109-6212
Fax 206.328.5581
Tel 206.324.9530

Control Chart Assumptions and Procedures for Non-Detect Results

Section 20.3.3 of the Unified Guidance provides new clarification of the underlying assumptions for CuSum control charts, the most significant being that, like prediction limits, they are also parametric procedures requiring normal or normalized data. Due to the high percentage of censored (non-detected) data summarized below, the assumption of normality cannot be verified.

Monitoring Well	Arsenic Percent Non-Detects	Copper Percent Non-Detects	Lead Percent Non-Detects	Nickel Percent Non-Detects
MW-1	100 %	79 %	92.9 %	92.9 %
MW-1A	100 %	64.3 %	71.4 %	64.3 %
MW-5	100 %	85.7 %	78.6 %	64.3 %
MW-7	100 %	92.9 %	85.7 %	78.6 %
MW-10	100 %	72.7 %	54.6 %	45.5 %
MW-12	100 %	81.8 %	81.8 %	81.8 %

The percentage of non-detect results is too high to use alternative methods such as substitution or censored probability plots to determine appropriate data normalization techniques. The percentage of non-detect results is also too high to use recommended Kaplan-Meier or robust Regression on Order Statistics (ROS) to estimate the mean and standard deviation. Alternatively, the Unified Guidance recommends that one-half the reporting limit be substituted for non-detect results.

Substitution for non-detect results creates bias in both the mean and standard deviation of a dataset. Substitution of zero likely creates a low bias; substitution of the reporting limit would create a high bias; and substitution of one-half the reporting limit creates an unknown bias in the mean. All substitution methods create a low bias in the standard deviation. The Port is currently substituting the reporting limit for non-detects.

Recommendations

The current Shewart-Cumulative Sum control chart procedure with substitution of the reporting limit for non-detect results should continue to be used. Since the control chart warning and control limits are based on multiples of the standard deviation and all substitution methods create a low bias in the standard deviation, CuSum control charts provide a conservative indication of concentration trends and early warning of concentration increases regardless of the value substituted for non-detected results.